The Newly Industrializing Countries in the World Economy

Challenges for U.S. Policy

edited by
Randall B. Purcell

A Policy Study by the Curry Foundation

AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C 20523

MEMORANDUM FOR MISSION ECONOMISTS

FROM: AAA/PPC/PDPR, Robert W. Kelly RWKelly

SUBJECT: Newly Industrializing Countries

Enclosed is a collection of articles, The Newly Industrializing Countries in the World Economy, Challenges for U.S. Policy, that documents fundamental economic changes in global manufacturing over the past four decades. It focusses on the role of technology and the entry into manufacturing, high-technology, and service trade of countries that now or in the near future will likely be globally competitive. The contributors discuss some of the resulting implications for U.S. policy makers. Please note that the collection of articles reflects the views of the authors and should not be construed to represent A.I.D. policy.

Briefly, the book points out that U.S.-led global economic integration and the accessibility of technology, particularly in computers, have led to successful economic development in a number of developing countries including Korea, Taiwan, Singapore, Hong Kong, Brazil and Mexico. Many others, like Thailand, are only slightly behind. Successful developing countries have taken advantage of freer trade and burgeoning new technologies to become internationally competitive in various niches. The more successful developed countries have adapted to increasing global competition with the help of the market and sound policies, and have restructured their manufacturing and services toward higher-tech sectors with more productive jobs. All but the poorest countries have improved economically from the ensuing rise in efficiency, productivity, wages, and incomes.

The analyses suggest that some U.S. policy changes, in areas such as trade and technology, may benefit both the U.S. and its aid recipients. In the "high-tech" areas, perhaps no current trade issue is more significant than the strengthening of intellectual property rights. Proprietary technology can be the basis for global competitiveness in high-wage industries and its value is rising because of steeper learning curves and shortened product cycles. U.S. policy, while not dominant because of the rise of Japanese finance and the large size of European markets, remains a powerful influence in setting the agenda, timing and rules for global economic integration, and certainly its own role in a world of interconnected economies. It is hoped that some portions of this book will be of value in your work.

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edited by
Randall B. Purcell

with the assistance of
Dina J. Sperling
Debbie A. Hall

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Foreword

This volume represents the culmination of the sixth in a series of the Foundation's studies that is inspired by the reality that the United States—and, indeed, the Western industrial countries—are no longer the only players in the world economy.

Our task in most of these projects has been to bring distinguished individuals in research, government, and the business community together in open, nonpartisan settings to examine the relationship between economic development abroad and economic growth and prosperity here at home and to lend insight to U.S. policymaking in international economics and development.

This particular project arose from the belief that the world economy is undergoing fundamental structural change. New technologies and methods of production—not to mention government policies—have moved many developing countries into the industrial arena, effectively blurring the line between the so-called First and Third Worlds. These forces, as they have spread capital and know-how around the world, and as they have created prosperity in far reaches of the globe, have also made the determination of U.S. interests much more complicated. We hope we have made a contribution toward making that determination a little easier.

We thank the Agency for International Development and the Rockefeller Foundation for their support of this project, and we extend our gratitude to the project writers, advisory committee members, and conference participants, whose thought and hard work this book represents.

Charles E. Curry
Chairman

Introduction

Randall B. Purcell

The basic fact of today is the tremendous pace of change in human life.

—Jewaharlal Nehru

A New Class in the World Economy

The India of today is a relatively poor country, but it is a country in the thrust of rapid technological change: A space station in Bangalore exists alongside ancient water wells, a nuclear power plant outside Delhi sits among thatched-roof huts, and jet aircraft production facilities stretch along mudcaked roads in the suburbs of Bombay. And so it is in Korea, Taiwan, Singapore, Hong Kong, Brazil, Mexico, and China. These countries are in the grip of change, and because of it they have become a new class in the world economy—not poor countries, but not rich; not Third World, but not First World. They are nations in economic and social transition; and because of their success (or, in some cases, potential success) in the export of manufactured products, they are forces to be reckoned with in an increasingly interdependent global economy.

The forces propelling the economic development of these so-called newly industrialized countries (NICs) are not new. They were first described by Raymond Vernon and others more than twenty years ago. As the developed nations pursued capital-intensive, value-adding pursuits, the NICs, through the application of hand-me-down technology with low-cost labor, and through state-directed investment drives and export promotion, sought competitive advantage and profits in simple manufactures such as clothing, footwear, bicycles, toys, and household electrical appliances. Further

advances in communications and transportation, and in the organizational ability of large firms, have made possible and profitable the even more rapid transfer of technology as well as the quick movement of capital and goods to the NICs. Now, the hand-me-down technology is only months old. This has meant that as the growth of manufacturing productivity has declined and service industries have expanded in industrial countries, the NICs have been able to successfully compete in the production of everything from steel and the machines that mold it to integrated circuits.

One of the principal questions we address here is whether newly developing patterns of production, technology acquisition, and trade will allow the performance of the NICs to be duplicated elsewhere: in Indonesia, the Philippines, Sri Lanka, Kenya, the Ivory Coast, Nigeria, Egypt, Morocco, Tunisia, Colombia, Costa Rica, Ecuador, Uruguay, Argentina, Chile, Malaysia, Thailand, Turkey, and Pakistan. The traditional product cycle would postulate that the Koreas and Taiwans of the world will move into the more sophisticated manufacturing pursuits that the industrial countries have abandoned on their path to services and higher technology, and that second-tier NICs will thus have the opportunity to seek competitive advantage in the manufacture and export of the more prosaic products from which NIC success has sprung.

The hope here is that this is exactly what will happen, and that the success of the emerging NICs, as measured by their ability to buy and sell abroad, will open a huge pool of demand, large enough both to balance the U.S. trade deficit and to spur industrial country growth rates—rates that have dropped to an average of under 3 percent in the 1980s, from more than 5 percent in the previous two decades when the Asian "tigers" were getting on their feet.

The Need for Diversification

It is far from certain, however, that this is what will take place. In their early development, the existing NICs pursued a development strategy that combined low-wage labor with the quick expropriation of the industrial technology of the time. Expropriation, mostly through foreign investment, was easier then—given high employment and growth rates. The capital attracted by the NICs earned the foreign exchange that was necessary to import the technology and machines they needed to industrialize further. Today, growth rates in the industrial countries are way down and unemployment is up. With demand stagnant, export capital does not pay for itself. And thus developing nations are shut off from the technology that would allow

them to produce even the most basic manufactured goods. There is nothing for them to sell except what they have in abundance: raw materials and primary commodities. We often forget that these represent more than half the export earnings of more than sixty developing countries; and for the developing world as a whole, they account for more than 70 percent of total exports.

Under most circumstances, a country that possesses a wealth of natural resources would be considered fortunate. The problem is that structural changes in the world economy have disrupted the traditional relationships that once made reliance on abundant raw material exports at least marginally profitable. For one thing, the development of synthetics and other substitutes has broken the link between industrial country growth and rising demand for raw materials. There is also evidence that industrial production in the North is switching from heavily material-intensive products and processes to new, less commodity-dependent and technologically more sophisticated modes of production. (Peter Drucker has noted that Japanese industry consumed only 60 percent of the raw materials it needed in 1973 to produce the same volume of goods a decade and a half later.[1]) Further threats to developing country commodity markets are increasing energy efficiency, shifting food-consumption patterns from basic foodstuffs to meats and other high proteins (the products of Northern farmers) and, not least, industrial country protectionism.

Indeed, it is for these reasons that primary commodity prices have been depressed over the long term, that there is little hope for a natural, sustained recovery, and that there is a consensus about the need for countries to diversify away from commodity exports and toward manufactures.

There are huge stumbling blocks to successful diversification, however. Despite their travails, many poor countries are reluctant to move away from commodities. Raw materials provide a sure, if unsteady, stream of income to government ministries, which largely control trade. New investments, if they come at all, are most often brought by foreigners, and that often means a loss of government control. Foreign debt is another problem. Commodity export sales must be maintained to make debt payments. The problem is that with most developing nations in debt and world economic growth at a crawl, the competition for sales is intense. Because of the demand elasticities for most primary product exports, the pressure on prices is downward. The results of competition, then—whether through price cutting or devaluation—are usually a reduction of national income, a drop in real wages, and increased poverty.

The Changing Division of Production and Labor

Certain other structural changes augur well for diversification. These have to do with the tremendous, newfound mobility of capital made possible by advances in communications, organization, and transportation; driven by the industrial and newly industrial countries' need to cut labor and other costs and to access other developed country markets; and reflected in production sharing and other kinds of direct and indirect investment in many emerging NICs. The movement of money, skills, and machines that work holds enormous potential.

On the flip side, there are structural changes that present developing countries with enormous constraints. Most developing countries have competed on the basis of a low-cost labor advantage. Now, with the development of microelectronics and robotics in the North, and given the increasing need for businesses to maintain market proximity in order to more flexibly meet rapidly changing consumer tastes, the Third World's labor advantage may become marginalized.

Some analysts argue that there has been little reversal in the comparative advantage of developing countries, even in textiles, electronics, and automobiles, where technology is most advanced. They argue that the cost of labor is still the most important factor of production for most industries; that the new technologies will not have a strong impact on other producers until the first years of the next century; and that, for now, technological advance is a blessing because it allows poor countries with lower-skilled work forces to produce more and varied goods. Others are concerned that the nature and pace of technological advance in the North and in the NICs threaten to create a large, immediate cleavage between the industrialized and newly industrialized countries on the one hand, and everyone else on the other. The more pessimistic view is articulated in the first chapter of this book.

What happens in the developing countries because of the new technologies will depend on how quickly the technologies come on line in the industrial world, whether the technologies can be transferred and easily adopted elsewhere, and how effectively the developing countries fashion their own macroeconomic, trade, and investment policies to adapt to change. On this last point there is reason for optimism: After a short period of adjustment, increased mechanization, at home or abroad, has seldom failed to introduce new opportunities that lead to higher employment and increased growth.

The Importance of U.S. Policy

The ability of developing countries to adapt to change will have a lot to do with how developed nations fashion their macroeconomic, trade, aid, investment, and technology policies vis-à-vis the developing world. This is our focus; and because this book is intended for a U.S. audience, our concern is with U.S. policy.

Clearly, debt is one of the principal reasons the developing countries have been slow to grasp economic opportunities. The poor nations of Central and South America, Southwest Asia, and Africa that a decade ago began to institute the kinds of free-market and open-trade policies designed to encourage private enterprise and attract investment have failed because the debt crisis continues to inhibit their ability to finance the imports they need to feed internal markets. Largely because of debt, developing countries are growing at half the 6 percent rate they attained in the 1970s. And for the most indebted among them, gross national income per capita has fallen to between 80 to 90 percent of its 1980 level.

It is important to recognize that the declining growth rates of the emerging NICs and other developing countries, together with the lingering effects of a once grossly inflated dollar, have had a far greater impact on the U.S. trade position than the transgressions of the Japanese or Koreans. In the 1970s, when Third World debt was comparatively low and world growth rates were higher, U.S. trade with developing countries increased by a remarkable 6 percent a year, far more quickly than trade with any other group of countries. By 1981, developing countries as a whole were purchasing more than two-fifths of U.S. exports. Today, even as the level of protection in the Third World has come down from the previous decade, these countries buy less than a third of what the United States sells abroad. Generating growth in the emerging NICs would restore U.S. markets. It would also provide a desperately needed boost to the poorest developing nations of Africa, South Asia, and the Caribbean—nations whose dependence on one or a handful of commodity exports is and, for the foreseeable future, will be total.

What can the United States do? Developing countries' debt-service payments now average close to 30 percent of export earnings. It is staggering to think that in 1986 these payments, with amortization, led to a $29 billion net outflow from the developing world. Clearly, some kind of creative debt restructuring is called for. The United States has every incentive to take the lead in implementing a responsible restructuring plan. (And it should be clear by now that the Baker Plan does not fit the bill.)

The United States must also manage the competitive challenges

from the Asian tigers and other NICs to engender a commercial environment that allows emerging NICs the access they need to export successfully. This will not be easy: The NICs provide more than half of U.S. imports of consumer manufactures. In 1987, South Korea, Taiwan, Hong Kong, and Singapore alone ran close to a $40 billion trade surplus with the United States. The flood of imports from these countries is one reason U.S. sentiment over $150 billion-plus annual trade deficits and dwindling employment in manufacturing in the United States is running strongly against other countries.

Yet, although the giant trade surpluses of the Asian tigers are largely due to trade with the United States, it is important to recognize that their prosperity has not come at the United States' expense. It is true that the tigers have been reluctant to allow their currencies to appreciate against the falling dollar. And although they are slowly opening their economies to trade, some stubborn barriers to imports remain. But it is also true that the economies of these countries were booming well before the United States began running large overall trade deficits, and their continued growth comes at a time when the United States is sending them huge volumes of capital goods, chemicals, and agricultural products. In 1986 and 1987, the growth of U.S. exports to South Korea outpaced the growth of imports from that country. And as a cheaper dollar takes hold among those currencies just beginning to appreciate against it, the trend seems likely to continue.

The system of relatively free trade that made the Asian tigers so successful is now under attack, and there is a great deal of uncertainty about whether and how the new order, more sensitive to foreign penetration, will accommodate latecomers. According to the United Nations Conference on Trade and Development, industrial country nontariff barriers applied to all nonfuel imports from developing countries rose from about 18 percent to more than 30 percent between 1981 and 1986. Currently, 35 percent of the value of all goods produced in the United States is protected by some kind of nontariff barrier. This figure was only 20 percent as recently as 1980.

To the extent that a new order is taking shape, it seems to be one in which none of the dominant economic powers by themselves will perform the kinds of vital economic functions that the United States performed twenty years ago. At that time, the United States served as the engine for world growth by providing markets to nations that had no other outlets. Today, the new competition and the decline of free trade as a guiding principle has left a policy vacuum that is in danger

of being filled by ad hoc management or mismanagement at the bilateral and regional levels.

Already there are trading blocs emerging around the United States in the Western Hemisphere, West Germany in Europe, and Japan in Asia. These blocs seem to have worked to free up intraregional trade. But there are questions about the possible discriminatory effects of these and other regional and bilateral groupings on the increasing numbers of potentially comparably productive nations that find themselves outside of emerging alliances.

The United States absorbs nearly half of developing country exports of manufactured products, most of which come from the Asian tigers and Mexico. Europe takes 25 percent of developing country exports, and Japan takes less then 10 percent. Clearly, Europe and Japan should be doing more to stimulate demand. But the capacity of all industrial nations to absorb new imports from the emerging NICs and poorer developing countries is much greater than supposed. According to the World Bank, exports from all the developing countries account for only a tiny share—2.3 percent as of 1983—of the markets for manufactures in the developed economies. While the proportion of products from the Asian tigers, Mexico, and Brazil is much higher in some countries, the proportion of products from poorer nations is much lower in most countries.

As the United States unavoidably begins to restrain its spending to balance its domestic and international accounts, Europe and Japan will feel more competitive pressure from the NICs and the increasing numbers of developing nations whose manufacturing capacity is beginning to come on stream. The danger is that as the competition heats up, these nations will become bolder and industrial countries will circle up the wagons to defend domestic markets. This would cause a contraction of world trade and a global recession. One way to avoid this is to integrate all nations into a truly multilateral framework for trade as quickly as possible. In such a framework, obligations would be more readily accepted, established rules would be followed, and, where natural opportunities for comparative advantage arose, subsidized opportunities and unfair trade practices would be checked.

It is hoped that the new round of GATT negotiations will usher in a new, more inclusive trading order. The United States, having assumed the leadership role in these talks, has made proposals for the liberalization of trade in agriculture. As for manufacturing, in which the competitive pressures are greatest and the GATT rules and dispute-settlement procedures are most antiquated (especially for

nontariff barriers), the United States seems to prefer to deal with the challenges on a bilateral basis.

This U.S. stance may not augur well for its initiatives in other areas, especially in services. According to the IMF, international payments for services were nearly $480 billion in 1986, about 23 percent of the value of merchandise trade. In the 1980s, trade in services has grown by 26 percent, compared with 16 percent for trade in goods. The United States and other developed nations want a liberalization of trade in services and stronger protection for intellectual property. The United States has argued that inadequate protection of such property is a major form of trade protection, and that U.S. companies lose close to $45 billion a year to foreign piracy and counterfeiting. Developing countries argue that any agreement to open up services should keep the development dimension in mind and be aimed also at promoting the economic growth of indigenous service sectors. The problem for developing countries is that they need foreign services in order to gain the technological skills to develop and compete. Clearly, developing countries cannot expect to freely extract economic benefits from the creative work of others; they may have to give up some independence in their service sectors to gain needed skills. But just as clearly, the United States should consider service trade in a broader context than it now envisages; indeed, it should consider such trade also as a tool for the transfer of technology.

There are other proposals in this volume that are designed both to generate growth in the emerging NICs and to enhance U.S. competitiveness at the same time. These range from aid and investment programs to spur the acquisition and diffusion of technology abroad to convalescent/transitional policies targeted at beleaguered U.S. industries that come under severe competitive stress. But of all these policies, by far the most important are a solution to the debt problem, coordinated macroeconomic policies in the industrial economies, and the reduction of protectionist barriers to Third World exports. These actions would act to stimulate global demand and ensure that all countries benefit fully from it.

Congress introduced twice as many protectionist proposals in 1987 as in 1980. It did little better in 1988. Congress is not predisposed toward taking the long-term view, even of the benefits of free trade. And presidents are not inclined to surrender national sovereignty, even that small degree required for effective multilateralism. But both Congress and the president would do well to remember that their initiatives on trade will send an immediate and clear signal to the United States' foreign creditors, who, already

threatening to send the dollar into free-fall, are looking for some small measure of confidence that the United States can balance its accounts.

In order to balance its external accounts, the United States needs to increase its exports or reduce its imports by about $150 billion a year. It needs another $50-billion-a-year trade surplus for ten years to pay interest on its accumulated foreign debt. If the United States can demonstrate that it is serious about helping shape the kind of trading order that empowers billions of people in the developing world to buy, it would tell its creditors in no uncertain terms that the turnaround in the U.S. trade deficit, while equivalent to about 5 percent of national output, is within sight.

About This Project

In early 1988, the Curry Foundation set out to structure a study culminating in a book that would present a coherent vision and direction for U.S. economic policy vis-à-vis the newly industrialized countries and the emerging NICs. This is that book.

The study was inspired by recognition of the danger of increasing protectionism and of the mutual opportunities that may exist in greater and more harmonious United States—developing country trade. In order to make suggestions that might reduce trade tensions, we sought to predict the future course of demand for protection in the United States. And to do this effectively we sought to anticipate the nature and pace of economic development—paying particular attention to the role of technology and the real and potential entry into manufacturing, high-technology, and service trade—of those countries that now and in the near future are likely to become globally competitive.

We begin with an examination, by Manuel Castells and Laura Tyson, of the changing division of production and labor and its effects on relative comparative advantage, developing country development strategies, and North-South economic relations. The focus of these authors is on location and production. They consider whether the traditional product cycle that governed relocation of production from high-wage developed country locations to low-wage developing country locations has been weakened; the extent to which labor costs, technology, market access, and protectionism determine location; and the determinants of and obstacles to absorbing new technologies and competing successfully in the global marketplace. Finally, they explore U.S. policy considerations in the new technological order.

The authors of the four chapters that follow focus on the development, transfer, role of technology, and role of trade in the East Asian newly industrial and emerging industrial economies, in China, in Mexico, and in Brazil and the newly industrializing Latin American economies. Also explored is the way in which the internal dynamics of each country, and its place in the structure of the world economy, influence its ability to use technology to promote development. The factor content of these countries' production and the composition of their exports are examined, as is their influence on and expectations from world, and especially U.S., trade. The real and potential impact of protectionism in U.S. and other OECD markets on these countries is also assessed, along with the advantages and disadvantages that free trade or special bilateral relationships (especially with the United States) might present these countries.

In Chapter 6, Robert Stern addresses the institutional environment for trade. Focusing on the way in which new competitive pressures are changing the rules for trade, he explores the shift toward unilateral, managed trade relations, the successes and failures of the GATT, and the benefits and drawbacks of bilateral and multilateral trade relations.

A working conference on this project was held at the Carnegie Endowment in Washington. There, eighty-five experts in technology, trade, and development from government, business, and the research community in the United States and selected developing countries gathered to critique the written examinations and make suggestions for a final, summary report. That report, written by James K. Galbraith, constitutes the book's final chapter.

Conclusion

Economic freedom produces more results, and profits buy more happiness, than do either government or ideology. The enormous efforts that other nations are beginning to make to harness education, entrepreneurial spirit, information, and technology is evidence of their eagerness to prove this point. That is why the United States must get to know these countries. It is also why we must begin to live up to our historical commitment to help all nations take part in the creation of wealth.

As a culture of successful capitalism and of the determined spirit that accompanies it, the United States projects a more promising and hopeful image around the world than any other country. This is our fundamental comparative advantage. If we wish to make progress as a nation in a competitive global economy, we must stop

lamenting the United States' relative economic decline and begin to exploit it. Certainly, the United States is made less powerful when others do well economically. But the point of this book is that it is only when others do well that the United States maximizes the welfare of its citizens. And it is only when absolute levels of well-being rise everywhere that we are assured that this world can become a more peaceful and humane place in which to live.

Note

1. Peter F. Drucker, "The Changed World Economy," *Foreign Affairs*, Vol. 34, No. 4 (Spring 1986), p. 773.

chapter one

High Technology and the Changing International Division of Production: Implications for the U.S. Economy

Manuel Castells
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The Reshaping of the World Economy

Three major interrelated factors are reshaping the world economy: the growing importance of international markets to national economic development, the technological revolution in products and processes based on microelectronic innovations, and the restructuring of the economies of the developed countries and the effects thereof on adjustment policies in the developing countries.

The first of these factors, the internationalization of the world economy, has intensified over the last two decades. International trade has become the driving force in the process of economic growth. As shown in Figure 1.1, for the past twenty-five years, rates of growth of international trade in volume have consistently outpaced rates of growth of world output. Slower growth rates do not change the differential between the two processes. There has been an irreversible movement toward greater dependence of national growth performance on the expansion of international markets. Even for the United States, which has been characterized by a high degree of self-sufficiency throughout much of its development, the share of exports in GNP increased from 6.7 percent in 1970 to 12.5 percent by 1981; the corresponding figures for imports are 5.9 percent and 11.4 percent. Furthermore, the process of growing internationalization encompasses not only trade but also movements of capital, labor, information, technology, and the organization of the production process itself. While the impact of international markets on national development is hardly a new phenomenon, what is new is the formation of an economic structure that works as a unit at the world level on an everyday basis. The worldwide interpenetration of all economic processes, in a complex web of linkages and interactions,

qualitatively changes the forms of operation of national economies and national societies.

The technological revolution based on microelectronics and its applications is still in its early stages. This revolution has two major features. First, it is based on information processing, although around this hard core of information technologies, other major discoveries are being articulated, particularly in new materials; and second, like all technological revolutions, it is process-oriented rather than product-oriented, even though it induces the development of a whole range of new products. These basic features determine two fundamental characteristics of the impact of the new technological paradigm: Its effects are pervasive, influencing the entire range of economic and social activities; and because new technologies are based on information, the new sources of economic development are more directly linked than ever to the scientific and managerial capabilities installed in societies, institutions, and organizations.

The microelectronics-based technological revolution is playing a fundamental role in accelerating and strengthening the internationalization of national economies. It provides the infrastructure without which such a process could never take place. The role of telecommunications in the formation of the world economy today is the functional equivalent of that of the railways in establishing national markets in Europe and the United States during the nineteenth century. Today, computer-aided manufacturing allows for the formation of a world assembly line, whereas the integration of management operations via telecommunications and information systems makes possible the unified management of spatially distant activities. In addition, new transportation technologies, much dependent on information processing for their effective operation, ensure a constant flow of commodities throughout the world.

The positions of individual national economies and business firms in the new international system increasingly depend on their positions in the technological division of labor, in terms of both products and processes.[1] High-technology markets, particularly in electronics, are the fastest growing sectors in the international economy, and performance in those markets is often a decisive element in overall economic growth.[2] But even more important for international competitiveness is the ability of countries and firms to use high-technology processes in the production and management of traditional industries.[3] Thus, competition in the world economy is increasingly dependent upon access to new technology and the ability to diffuse and use it effectively.

The third process modifying the international order is the restructuring of the developed economies in the 1980s and its effects on adjustment policies in the developing countries. The restructuring process has its roots in the economic crises of the 1970s. Sooner or later, most of the developed countries responded to these crises in a broadly similar fashion, concentrating initially on fiscal and monetary policies to curb the structural causes of inflation.[4] Controls on wage increases, relaxation of regulatory environments for business, greater flexibility of management, the slowdown of public social spending, an increase in military spending, tight monetary policy, and an emphasis on international competitiveness are elements of the largely shared approach toward restoring the foundation for economic productivity and stable growth in the developed countries. New technologies have constituted a powerful instrument in this restructuring process, insofar as they have enabled productivity gains without corresponding increases in employment and labor costs, and have opened up new markets, particularly in high-technology defense industries.

The three factors identified here—a restructuring process determined by both government policies and firm strategies, the formation of an increasingly unified world economic system, and the diffusion of the effects of the microelectronics-based technological revolution—are transforming the international economic order. In the process, North-South economic relationships are changing in significant ways. We will summarize the most important of these changes and conclude with some policy implications for both the developing countries and the United States.

New Patterns of International Trade and the Role of Technology

Over the last twenty-five years, trade performance has become the cornerstone of economic growth, both in the developed countries and in the less-developed countries (LDCs).[5] In the Organization for Economic Cooperation and Development (OECD) area, the growth of Japan, of Germany, and to a lesser extent of Italy and France is directly linked to their export performance and to the competitiveness of their firms in international markets. The newly industrializing countries (NICs) have relied on exports to build their industrial bases and expand their domestic markets.

The growing role of trade in economic development has made the so-called South even more dependent on its relationship with the North. Yet there is a new type of economic dependency linked to a

substantial shift in the composition of trade. As Table 1.1 shows, the 1980s witnessed a considerable decline in the rate of growth of agricultural products in world trade, as well as a negative rate of growth of trade in mining products, following a moderate increase during the 1970s. In contrast, trade in manufacturing has increased at substantially higher rates, and the slowdown in its growth during the 1980s has been smaller than that of agricultural commodities. World trade has shifted toward manufacturing goods and away from agricultural and resource-based commodities, the traditional exports of most developing countries. In addition, the prices of agricultural raw materials, metals, and minerals have decreased over time relative to the prices of manufactured goods and services. The result has been a further deterioration in the terms of trade for the South as a whole.

In some instances, countries in the South have not responded passively to changes in world trade flows but have actively transformed their economies to stimulate manufacturing exports. As a result, trade within product groups between developed and developing countries has increased in importance. Table 1.2, elaborated by GATT, shows the rapid rise of the index of parity between exports and imports for major product groups between 1980 and 1986. The main exception is clothing, for which it seems there is increasing specialization of the South as producer and exporter. Although North-South trade patterns still differ widely from the relative homogeneity of exchanges that characterizes trade among the OECD countries, there is clearly a trend toward an international organization of trade within each economic sector. The traditional version of unequal exchange between manufactured goods and commodities is being replaced by a new version of unequal exchange between kinds of goods and market access.

Yet for many countries in the South, particularly in Africa and much of Latin America, primary commodities are still the major exports. There is increasing diversity among the developing countries in terms of their capacity to shift toward manufacturing exports. Table 1.3 shows dramatic differences in the performance of manufacturing exports from selected economies during the first half of the 1980s. Although countries such as Indonesia and Turkey have joined the Asian NICs, Brazil, and Mexico in realizing rapid export growth, much of South America (with the exception of Chile) has regressed in export performance in the new sectors, and traditional exports have suffered the constraints determined by the structural transformation of trade patterns. Table 1.4 shows the

importance of manufacturing exports for most economies in Asia; indeed, the traditional image of poor Asian countries (including Pakistan and Bangladesh) as pure agricultural exporters has been reversed.

To the extent that countries become integrated into the international economy, they have no choice but to participate in the international division of labor within manufacturing. Performance in manufacturing exports for the world market used to depend primarily on comparative advantage linked to lower production costs, especially lower labor costs and government regulation. One might therefore anticipate the industrialization of the Third World on the basis of a division of labor in which lower-skill manufacturing could be decentralized to these locations, according to the logic outlined by product cycle theory. In fact, some developments in Asia and Latin America during the 1970s did follow this model, both through relocation of U.S. and European factories, and through certain endogenous efforts on the part of Third World entrepreneurs. The new technologies and the growing importance of location near core markets for customized production are transforming this situation, although the actual pattern of effects differs from the pattern predicted by the "relocation back North" thesis.

High Technology, Location of Manufacturing, and the New International Division of Labor

During the 1960s and 1970s, U.S. and European multinational companies decentralized part of their manufacturing operations to low-cost locations in the Third World, particularly to East and Southeast Asia and to the Mexican border, mainly in an effort to circumvent union control, high wages, and government regulations. Together with the process of endogenous export-oriented industrialization in a few NICs, these tendencies seemed to portend what some authors labeled the new international division of labor,[6] a radical version of the neoclassical product cycle theory.

In principle, the new microelectronics-based manufacturing technologies (CAD/CAM, CIM, and advanced robotics), and the new flexibility they allow, make possible a reversal of the locational pattern of advanced manufacturing that could lead to what Juan Rada labeled "relocation back North." Such relocation could occur not only in high-technology industries but in labor-intensive industries as well, given that automation reduces the labor cost component of

production costs. A number of experts, such as Susan Walsh-Sanderson,[7] anticipate the possibility of such a relocation trend, involving a substitution of automated onshore factories for offshore facilities employing Mexican workers in U.S. companies in the coming years. However, the evidence to date does not provide much support for the "relocation back North" thesis.[8] Multinational companies continue to locate their operations in a number of NICs, and manufacturing exports from the Third World continue to penetrate markets in the North.

As Table 1.5 shows, in the case of Mexico, the maquiladoras, both in the Border Region and in the rest of Mexico, have continued to grow spectacularly during the 1980s. In addition, as Hinojosa and Morales have noted,[9] U.S. automobile companies have intensified their production in Mexico for export to the United States. Moreover, these companies have substantially upgraded the technological level of both products and processes in their Mexican operations. Automobile engines are the main output for these operations. In East and Southeast Asia, the traditional investment patterns of foreign manufacturing companies in electronics have been reinforced, such that Japanese firms have now joined their European and U.S. competitors in the practice of offshoring.[10] The technological level of electronics firms in South Korea, Taiwan, and, to a lesser extent, Hong Kong and Singapore has been upgraded. At present, research and development (R&D) centers are designing chips in these four countries. Korea has become the only country outside the United States and Japan with its own design capability for 256K chips.[11] Investment continues to flow into Malaysia and the Philippines,[12] and new factories with low-skill requirements are locating in Thailand and in China's Guandong province. Moreover, domestic producers in the Asian NICs, Brazil,[13] and Mexico[14] are starting to upgrade the technological level of their products and to penetrate OECD markets on the basis of their new competitiveness. Hong Kong textile and garment manufacturers provide a striking example.[15]

Why is the pattern of decentralized location so persistent? There are several reasons:

1. Multinational firms are indeed automating, but very often such automation takes place in existing locations (e.g., in Singapore and Malaysia) to save new investment in fixed assets, as well as to avoid disruptions in production necessitated by relocation.

2. While labor costs for unskilled workers have become a less important factor in the overall strategy of major firms, labor costs for engineering personnel are considered important. There is now a

growing pool of engineers and technicians in several NICs, thanks to the active training and educational policies of their governments, often in cooperation with foreign firms.

3. A supportive political environment, with governments ready to accommodate business needs, is an important factor for many companies, as witnessed by their unrestricted enthusiasm for the political stability of Singapore, in spite of the authoritarianism of its regime.

4. One of the most misleading assumptions of the international division of labor theory is that skilled operations required by automated factories cannot be performed by Third World workers. In fact, an important study by Harley Shaiken provides evidence to the contrary.[16] Shaiken compares labor productivity in three similar automated factories that are operated by the same automobile company and that use the most advanced microelectronics-based equipment in the United States, Canada, and Mexico. He reports that after eighteen months, the Mexican workers reached 80 percent of the productivity level of their North American colleagues, in return for one-tenth of their salary (see Figure 1.2). Such rapid learning by the Mexican workers can be explained by two factors: The workers were young and educated, a condition that has become increasingly common in the newly industrializing world; and high level engineers were brought into the plant to work at the shop-floor level and to personally train and assist the new workers for several months. The result was a productive labor force able to use advanced equipment and to repair and maintain it. Overall, the Mexican plant organized an environment that functioned with lower overall production costs, not just lower labor costs.

5. Finally, a substantial part of the new process of peripheral industrialization is not linked to multinational companies; rather, it is the result of new, domestic processes of industrialization that are generally government-supported and aimed at world markets. Accordingly, new expanding markets can develop in these countries and provide an additional incentive for multinational companies to reinforce their presence there.

In sum, there has been no "relocation back North," nor is there likely to be one. In fact, Japanese companies are now proceeding with their own strategic deployment. Specifically, they are offshoring their factories, particularly to Taiwan, Singapore, and Thailand, so as to lower their production costs (mainly their land and real estate costs), and diversifying their location so as to circumvent tariffs barriers in Europe and North America.[17]

However, advances in automation and the new relationship to

markets encouraged by flexible manufacturing and customized production do have major implications for location patterns in manufacturing. The main implication is the need to establish a presence in the core markets of the OECD countries, both for direct linkage to their markets and for access to technological innovation. For some firms these objectives require location (or relocation) in the core countries, as was the case with Fairchild, which replaced its Hong Kong facility with a fully automated plant in Vermont. Other firms have slowed down the process of relocating to Third World sites, opting instead for the automation of manufacturing plants close to their headquarters and R&D centers, as seems to be the current pattern among several Silicon Valley companies.[18] The fundamental reason for such behavior, however, is not reduction in labor costs resulting from automation but the need to be in close contact with markets that are increasingly being organized in clusters of clients and suppliers. This analytical distinction is fundamental because it explains the unfolding logic of new locational patterns.[19]

Firms or networks of firms are internationally and interregionally organized, yet tightly connected in each particular location to a network of other firms. The division of labor occurs within firms at different locations, such that each country is placed in a hierarchical position according to the technological level of the operations performed by the firm in each particular country. A new industrial system that is internationally organized with horizontal clustering in each location seems to be emerging. Locations are determined by access to technological innovation and by the need to maintain a customized relationship to the market.[20] The higher its technological level and the greater the importance of its market, the more a firm needs to be present in a particular location, whether it is a multinational corporation or a producer of the NICs. Thus, countries are able to attract industrial investment not so much because of their comparative advantage in labor costs but because of their market potential and their technological capacity. Under new technological conditions, the NICs climb the ladder of the world economy on the basis of their ability to master new technologies and through the expansion of their own markets, hand in hand with their penetration of markets in the world economy. The net result of this new development pattern has been the growing diversification of the world's economic geography, with multipolarity in the North and a fundamental cleavage in the South between industrializing countries and commodity-oriented economies—a cleavage that is largely a function of the differences in technological capacities and market potential among various groups of developing countries.

The End of the Third World and the Role of Technology in the New Development Process

The new conditions of the international economy determine a process of growing diversification in the Third World, largely conditioned by the capacity of each developing country to reach a certain level of technological development, without which it would be unable to compete in world markets for manufacturing goods.[21] It will become increasingly difficult for countries that fail to reach this level to obtain the hard currency necessary to import the capital goods and know-how critical to their development process. A few countries in the Third World have been able to achieve the required technological capacity after competing in the world economy for at least two decades, mainly on the basis of lower production costs in traditional manufacturing. But the large majority of Third World countries do not have the potential to attain a significant level of technological upgrading by themselves; hence they seem destined to lag increasingly behind the OECD countries and their new economic partners, the newly industrializing countries (see Table 1.6). In addition, some very large countries, such as India and China, may be able to use their resources and market potential to reach some level of development as subordinate elements of the dynamic pole of the world economy. Overall, these processes spell the end of the Third World as an economic, social, cultural, or even political entity, if it ever existed.[22]

The newly industrializing countries (mainly the four Asian "tigers," plus Brazil, Mexico, and perhaps Malaysia) have shown that a dynamic integration in a subordinate position in the world capitalist economy can lead to substantial development, even though (in the case of Brazil and Mexico) high rates of economic growth and increased economic competitiveness go together with substantial social inequality and uneven regional development. Furthermore, the four Asian countries and Brazil (and, to a lesser extent, Mexico) have responded to the technological challenge by improving their educational systems and creating a national basis for high-technology industries. Thus, these countries are now clearly part of the dynamic pole of the world economy, in spite of the gigantic social and political problems still confronting them.

But the saga of the successful NICs is an exception, rather than the rule, in the process of development. Policymakers must resist the temptation to use these NICs as role models for other Third World countries, forgetting the historical specificity of the NIC development processes.

Three factors were crucial to the unprecedented growth of the four Asian NICs:[23]

1. Greatly inspired by the Japanese model, the state deliberately intervened in the development process, guiding the economy and providing key elements of economic and social infrastructure. (Contrary to popular mythology, state intervention was significant even in "free-market" Hong Kong.)[24] Certain structural reforms, such as the agrarian reform in Korea and Taiwan and the urban reforms in Hong Kong and Singapore, established the preconditions for successful development.[25]
2. Each nation's developmental effort coincided with a period of rapid world economic expansion and internationalization.[26]
3. Certain geopolitical conditions made possible easy access to key markets in the United States and Great Britain, and substantial economic aid became available in the early stages of the development process.

Together, these three factors established the necessary conditions for economic growth. Their combination is historically specific and cannot be easily replicated. Even Brazil and Mexico—both of which have achieved a substantial level of industrialization (they are in fact respectively the eighth and tenth largest industrial economies in the West)—have followed a different development process.[27]

The East Asian NICs face the current technological challenge from a position whereby they must enhance their competitiveness in order to survive; in addition, they have the potential to obtain technology transfer and to promote a process of endogenous technological development. The flexibility of their new industrial structures makes possible a rapid adaptation to new technological conditions.

Such is not the situation for the majority of developing countries, however. Many of these are mere consumers of the technological revolution, inasmuch as they mainly purchase military hardware and consumer goods for their small middle classes. Most are simply bypassed by the process of technological change (see Table 1.7), although they also suffer the consequences of the techno-economic restructuring of the world system through the relative downgrading of their competitive capacities. Practically all of Africa, most of the Caribbean and Central American nations, and several of the Latin American nations, such as Colombia and Peru, find themselves in this situation.

A small group of very important countries, China, India, maybe Indonesia—and Brazil and Mexico to the extent that they share some of the characteristics of the NICs—are in a special position. They have substantial scientific and technical potential, which is concentrated in the military and in the bureaucracy; yet most of their industries are not internationally competitive because of their technological backwardness. On the other hand, because of their large size, these countries represent major potential markets for the future. Thus, they have a strong bargaining position from which to obtain technology transfer from multinational corporations and foreign governments in exchange for market access. These countries, if they continue to link up with the world economy on the basis of strong government guidance, could well combine an export-oriented strategy with the growth of their domestic markets, while reaching some level of technological development—in close interaction with the major technology holders of the world.[28]

If those countries fail in this complex strategy of using their international bargaining power to develop their own economies on the basis of their domestic markets, they will join the majority of developing countries, that is, they will be increasingly marginalized and disarticulated by the new dynamism of the world economy. They will have little role to play, except in the geopolitical strategies of the superpowers.[29] Most of the developing countries will be negligible as markets and unnecessary as providers of products, which in turn will become increasingly obsolete in the face of more technologically advanced forms of production and consumption. (See, for instance, the decline of raw materials in trade as shown in Table 1.8.) The most immediate victims of the processes of automation and reinforcement of market connections in the core countries will be the would-be second-tier NIC countries. The entry of these countries into international markets for manufactured goods will be limited by the enhanced standards of quality and the cheapening of the production process in core advanced economies, including the first-tier NICs.

The growing gap between a large number of developing countries and the core economies will lead, in many instances, to what we might call the "perverse connection"—namely, the use of these impoverished countries as production and distribution centers for drugs, smuggling, and money laundering.[30] The production of coca and coca paste in Peru and Bolivia, the processing and distribution of cocaine in Colombia, the money laundering in Panama and Bahamas, the smuggling economy in Paraguay—all are examples of substantial shares of national economies that create a

new form of economic dependency, supplying the dominant economies with goods in high demand, thus restructuring their own societies to adapt to such demand as a last resort to survival.

The new international economy, dominated by the control of capital flows and technological know-how, not only restructures the Third World but, in fact, causes it to disappear as a meaningful unit. But it also unleashes new processes of dominance and dependency that pull apart developing countries, while establishing their segmented connection to different regions of the core economies according to the needs of such regions and to the distinctive possibilities of each developing country. The only alternative to such dependency appears to be lonely starvation in a world that has become an asymmetrically interdependent entity.

U.S. Policy Considerations

During the first half of the 1980s, the U.S. trade deficit increased dramatically. The deterioration in the U.S. trade position was broadly based, occurring in all major product groups—even those high-technology products in which the United States traditionally ran a surplus—and with all major trading partners. The primary causes of the growing trade deficit were macroeconomic conditions in the United States and the rest of the world. Macroeconomic conditions caused the dramatic appreciation of the dollar that reduced the price competitiveness of U.S. products on world markets between 1981 and 1986. Macroeconomic forces also resulted in both rapid growth of the U.S. market and stagnant growth in foreign markets—especially Third World markets, which became increasingly important to U.S. exporters during the 1970s.

These macroeconomic trends were superimposed on longer-term trends of relatively low U.S. productivity growth and the gradual disappearance of the United States' technological lead in a number of industries. In many industries important to the economic strength of the developed countries, especially the United States, competition has intensified. Industrial sectors once considered stable, such as automobiles, have entered a new phase of instability; and relatively new industrial sectors, such as semiconductors and computers, have seen an intensification of competition as a result of the rise of Japan and the new East Asian producers.

In the United States, the growing competitive challenge from foreign producers in industries, only recently thought to have been obvious sources of U.S. economic strength, has coincided with the emergence of huge trade imbalances. The NICs, especially the East

Asian tigers and Brazil, have built formidable industrial capacities during the last decade. In 1980, the United States ran a surplus of $26.1 billion with the NICs; in 1986, it ran a deficit of $27.9 billion with them. To some extent, the change in the U.S. trade position with the NICs is the result of the debt crisis. South Korea, Mexico, and Brazil sharply increased their exports to service their debt. But their growing presence in world export markets is likely to outlast the debt crisis and to pose a continuing competitive challenge to U.S. producers. The East Asian NICs, in particular, are likely to remain world-class competitors in products that were the exclusive domain of the developed countries as recently as a decade ago. These countries have high enough levels of education to absorb sophisticated technology. Their productivity levels in many sectors now match or approach U.S. performance, and their wages are significantly lower—a deadly competitive combination. In addition, because they have relatively low per capita incomes by developed country standards, they are not likely to become major offsetting markets for U.S. producers.

Sobered by the persistence of huge trade imbalances despite the sharp drop in the dollar, U.S. policymakers have become increasingly interested in measures to restore or improve U.S. competitiveness, especially in the so-called high-technology industries. Three basic types of policy initiatives are under consideration: (1) general policies to enhance U.S. competitiveness, such as policies to improve the educational base and to increase funding for R&D in commercial areas; (2) promotional policies targeted at specific industries or technologies, such as the proposed Sematech program for the semiconductor industry or proposed programs to foster research on commercial applications of superconductivity; and (3) trade policy measures designed to force greater openness of protected foreign markets, including those in developing countries such as Brazil, Korea, and Taiwan, and to close beleaguered U.S. markets at least temporarily.

Of these policy measures, by far the most threatening to countries of the developing world are the protectionist trade policies. The United States is the major market for manufactured goods from the Third World. Indeed, during the first half of the 1980s, when demand declined and then stagnated in the other developed countries, the United States became the buyer of last resort and was a major impetus to growth for the developing countries. If U.S. markets become less open, or if, as seems inevitable, they become less buoyant as the U.S. trade imbalance adjusts,

developing countries will face sharply reduced market prospects for their manufactured exports.

Trade policy measures in the United States may affect developing countries in the new technology area in a variety of ways. An obvious example is the impact of Sections 806.30 and 807.00 of the U.S. Tariff Schedule on the offshoring decisions of U.S. semiconductor firms. Under these rules, imports of assembled goods are dutiable only to the extent of the value added to the goods at offshore plants. Lured by low-cost labor and encouraged by these rules, U.S. semiconductor firms invested heavily in foreign facilities in several East Asian developing countries in the 1970s. By 1980, the United States had imported $2.3 billion from offshore semiconductor plants located in these countries.

A more recent illustration of the effects of U.S. trade legislation on the developing countries concerns the U.S.-Japan semiconductor trade agreement, one objective of which is an increase in the price of semiconductors in all third-country markets. This increase acts to the advantage of third-country producers such as Korea, but to the disadvantage of third-country consumers such as Brazil and India. In response to large trade deficits in electronics with Korea, antidumping duties have been imposed on color televisions. In addition, the United States has threatened to withdraw favorable treatment under the generalized system of preferences to induce export restraint by developing countries that discriminate against U.S. producers in critical high-technology markets.

In the high-technology area, perhaps no trade issue is as significant as that of intellectual property. With steeper learning curves and shortened product cycles, the value of proprietary technology has increased; as a result, increased efforts are being made to protect property rights over such technology. The United States is pursuing bilateral negotiations with its trading partners to strengthen intellectual property protection. Bilateral pressure has been brought to bear on a number of countries, including Singapore, Korea, Japan, Taiwan, Brazil, and China. Korea is the object of an action filed by Texas Instruments; the International Trade Commission is seeking relief from injury due to patent infringement; and National Semiconductor is suing a Taiwanese company for patent infringement.

If intellectual protection becomes more effective—despite the great difficulties involved in enforcing appropriability over microelectronics innovations—the price of technology imports in developing countries would tend to increase and the access of these countries to the latest-generation technology would be reduced.

There is little doubt that at least some developing countries, especially the East Asian NICs, have benefited from their ability to copy innovations of U.S. companies and to earn a substantial fraction of the rents resulting for such innovations because of their competitive manufacturing capabilities. As a result of the failure of the international patent system to provide effective protection for innovations in electronics, imitation and the competing away of innovation/monopoly rents have proceeded much more rapidly nationally and internationally.

In addition to stimulating political interest in policy measures to improve the competitive position of the U.S. economy, the changing world economy has stimulated new responses by U.S. producers themselves. The current period is one of intense technological competition among the technological leaders of the developed countries—a competition that has reduced the rate of return on innovation, while the cost of innovation has increased. Producers in the developed countries are scurrying to find new strategies to shore up their position. Many of these strategies have implications—some disadvantageous, others advantageous—for the developing countries. It is too early to assess their net effects.

On the negative side, multinational producers are trying even harder to limit access to frontier technology by potential competitors in both developed and developing countries. Their efforts are reflected in reduced willingness to license state-of-the-art technology and in the decision to press intellectual property rights to the "absolute limit." Limitations on access to frontier technology are likely to especially harmful to the East Asian NICs, which may have the human and basic infrastructure to jump to the technological frontier if such technology becomes available to them.

Also potentially disadvantageous to the developing countries are the forces encouraging an increase in intra-OECD investment flows in such important industries as automobiles and semiconductors. As noted earlier, current competitive dynamics in both industries—along with the features of microelectronics technology—encourage a strategy of locating close to major markets, and in both sectors the major markets remain overwhelmingly within the developed countries. In addition, actual or threatened protectionist barriers in the United States and the sharp drop in the dollar have attracted and will continue to attract new investment flows into the United States in both industries. Because of the way technological know-how flows in social networks and is embodied in individuals, it is also often strategically advantageous to locate in an area with a high concentration of high-technology production. This partly explains

the interest of European, Japanese, and Korean firms in setting up joint ventures or production locations in U.S. high-technology communities.

On the positive side, competition among producers from the developed countries encourages a scramble among them for new markets. This scramble, along with the rapid pace of technological breakthrough, has caused dramatic declines in the prices of semiconductors, computers, and other electronic equipment to the benefit of all users, including those in developing countries. Moreover, market pressure makes it difficult for firms to avoid the temptation of licensing their best technologies in order to gain an edge over their competitors. Thus, even as producers struggle to enforce intellectual property rights and to increase royalties, they seem willing to make deals that could be advantageous for developing countries with large potential markets, such as China, and for producers in developing countries, especially those in East Asia.

Finally, as a result of competition among producers in the developed countries, locating production in certain NICs continues to be an attractive competitive strategy. These places offer inexpensive engineering talent; cheap components; a supportive infrastructure, tax, and regulatory environment; and the possibility of outmaneuvering Northern competitors from third-country platforms.

Growing Interdependence: The Need for a Global Perspective

The diversification of the South and the transformation of North-South relations under new technological and economic conditions can by fully understood only in the context of the restructuring of the North itself. Under new technological conditions, economic competitiveness depends on a nation's ability to connect technological innovation, manufacturing capacity (both for high-technology industries and for high-technology-based manufacturing), and a large, dynamic market, whose feedback can be felt in both production lines and R&D centers. In addition, a healthy economy must link this productive core to sources of capital and to a wide range of services that support production, consumption, and the financial system.[31] The combination of these factors in an efficient management system served by a reliable infrastructure based on information technologies ensures a self-expanding process of economic growth. As a whole, the OECD area meets all these conditions for competitiveness. It is for this reason that the relative economic strength of the North continues to increase. The stage is

set for the economic dominance of the developed world, in spite of its demographic decline.

Ohmae's "Triad Power" (the United States, Japan, and Western Europe) actually constitutes the fundamental core of the world economy.[32] Any additions (e.g., the NICs) can exist and prosper only on the basis of their access to the markets, technologies, capital, and capital goods generated in the core. The developed country core also increasingly works as a unified structure; indeed, it attempts some relative coordination of economic strategies at the level of the main governments of the Triad. Even the specter of protectionism, as well as its reality, cannot challenge the fundamental inter-penetration of the developed economies. Protectionist policies are often best understood as strategic elements in the practice of competition, rather than as real barriers to a competitive environment.

Yet, within the core of the system there is increasing diversification and a tendency toward multipolarity. The technological and economic rise of Japan and the new-found dynamism of Western Europe after its adjustment policies of the 1980s clearly mark a limit to the dominance of the United States. At the roots of the relative balance of economic power among the three major regions of the developed world lies the ability to connect technology, manufacturing, and large domestic markets. Japan relied on this ability as the basis for its growing industrial power and subsequent export performance. Western Europe is in the process of integrating all these elements around the largest and richest market in the world: 320 million consumers with an average income comparable to that of the United States in the 1990s. (Full integration will probably be reached only by the year 2000, in spite of the fact that the European Economic Community [EEC] anticipates 1992 as the official date for the formation of a unified market.)

U.S. industrial competitiveness has weakened in comparison with that of Japan and Europe. Nonetheless, U.S. industry still enjoys a strong competitive position in many areas of high-technology products and processes (see Tables 1.9 and 1.10). The choice facing the United States is one between intensifying competition to capture a larger share of the slowly growing markets of the OECD, on the one hand, and creating policies to promote the expansion of new markets in the Third World, in addition to markets in the developed countries, on the other hand. The former strategy runs the risk of recurrent demand crises as the productive potential unleashed by new technologies outstrips demand. The latter strategy, supported by

the concerted action of the U.S. government, U.S. companies, and international institutions, promises to work to the mutual benefit of both the United States and the Third World.

The world economy is in a period of macroeconomic imbalance and volatility. The economies of the North, and particularly that of the United States, face the problem of stimulating global demand in a sustained way in a context darkened simultaneously by the U.S. trade imbalance and debt and by the financial limitations of the developing countries. For the developing countries, the preconditions for successful development—rapid growth of world trade and access to finance—are not likely to be realized without coordinated action by the developed countries. The U.S. market can no longer serve, as it did in the first half of the 1980s, as the engine of growth for the developing countries. Nor can the United States alone afford to bear the total burden of debt relief required to address the debt crisis that remains unresolved in much of the Third World. Coordinated macroeconomic expansion in the North, especially in Europe and Japan, is essential to stimulating demand in the global economy. And protectionist barriers to Third World exports must be reduced if the developing countries are to benefit fully from growing demand in the developed countries.

The current insufficiency of global demand at the macroeconomic level is reflected in individual sectors, especially those in which the new technologies provide the foundation for rapid growth on the supply side. Demand potential is not keeping pace with supply potential in key industrial sectors, such as automobiles and electronics, partly as a result of demand limitations in the Third World. Thus, any serious discussion of the new relationship between technological development and economic growth from a global perspective must include the potential role of the Third World economies in overcoming the demand crisis that threatens both the producers and the users of the new technologies.

The developed countries must take a long-term view of the world economy and invest in the emerging markets of the developing countries. After the five major industrialized countries, the largest markets are Brazil, India, Mexico, and China. By GNP measures, these countries are already larger than Austria, the Netherlands, and Australia. During the next decade, Europe will grow at a rate of 1 percent—or at most 2 percent. In contrast, many of the countries of the developing world have projected growth rates in excess of 5 percent per year.

Under these conditions, policies to spur the acquisition and

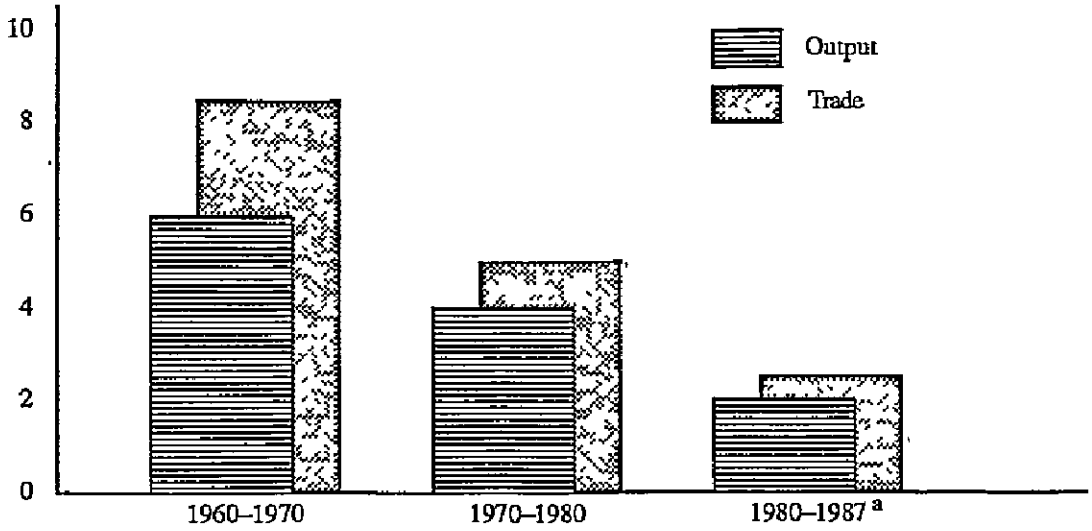
diffusion of new technologies for economic development in the Third World could become a key area in international relations over the next several years—an area in which a global strategy based on the respective interests of both North and South could yield beneficial results for both groups of countries.

It is easy to understand how the South could benefit from the international coordination of policies to support its technological development. The new technologies hold great promise for solving many pressing developmental problems in education, energy use, power generation, agriculture, raw-material extraction, communications, transportation, and health. In addition, as argued earlier, the new production technologies are increasingly important as determinants of a given nation's competitive position in the most rapidly growing world markets.

In principle, it is less clear why the North in general, and the United States in particular, should be interested in creating the conditions for technological advancement in less developed and often hostile Third World environments. One could make a humanitarian argument in favor of such a strategy, but in a time of slow growth and economic difficulty in the North, humanitarian values are not likely to hold much sway over policy initiatives toward the Third World. Alternatively, one could make the argument that an increasing gap in income and well-being between the haves and the have-nots in the world economy carries the threat of greater social and political disruption—a threat that the North and especially the United States might wish to avoid for security reasons. However, the experience of the last several decades indicates that there is no simple causal relationship between economic conditions and political and social order in a given national context. Thus, political and security concerns are not likely to be a solid foundation for generous economic and technology policies financed and supported by the North to spur technology-based development in the South.

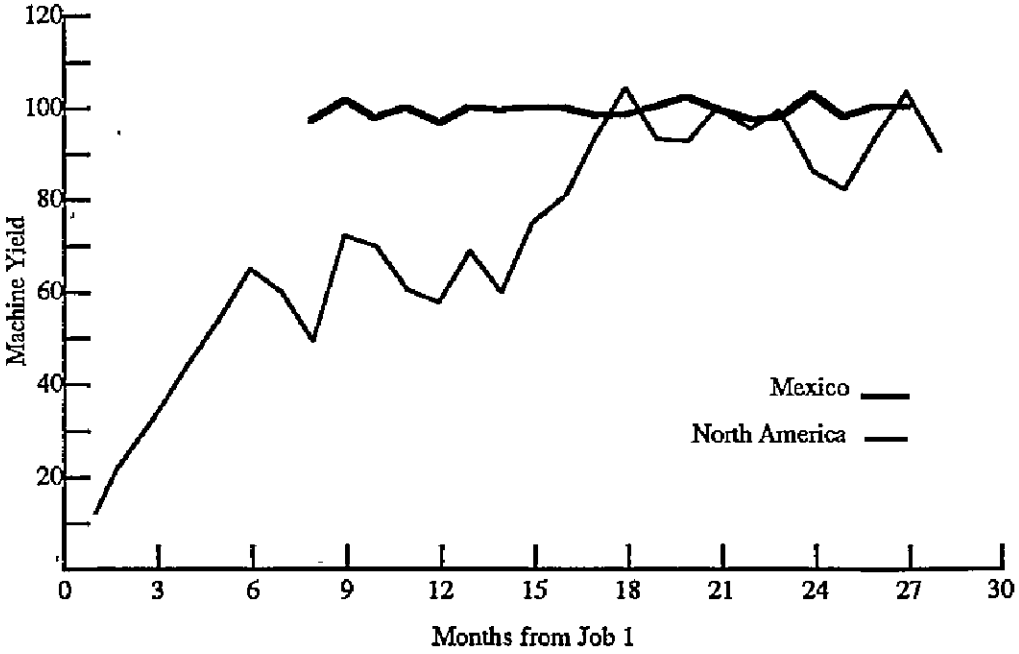
Only the economic self-interest of the North can motivate a vigorous new policy of stimulating growth and promoting technology transfer to the Third World. The first step in such a policy is a program of real debt relief, linking the provision of additional credits to an effective industrial strategy. Such a program would enable the debtor countries to engage in a process of growth that would reduce the risk of recessionary demand conditions for high-technology producers in the developed countries and ultimately benefit the world economy.

Figure 1.1 Growth of World Output and Merchandise Trade, 1960–1987 (Annual Average Percentage Change in Volume)



Source: GATT, *Report on International Trade 1980–1987* (Geneva, 1987).
[a]Estimate based on data for the first six months.

Figure 1.2 Machine Yield on the Mexican and North American Block Lines (As a Percentage of 1985 Yield)



Source. Company data, cited by Harley Shaiken and Stephen Herzenberg, *Automation and Global Production* (San Diego, 1987).

Table 1.1 Growth of the Volume of World Merchandise Trade and Production by Major Product Group, 1960–1986 (Average Annual Percentage Change)

	1960–1970	1970–1980	1980–1986	1985	1986
Exports					
Agriculture	4	4.5	1	0	–1
Mining	7	1.5	–1.5	–2	7.5
Manufacturing	10.5	7	4.5	5	3
All merchandise	8.5	5	3	3.5	3.5
Production					
Agriculture	2.5	2	2.5	2	1
Mining	5.5	2.5	–1.5	1	6
Manufacturing	7.5	4.5	2.5	3.5	3.5
All merchandise	6	4	2	3	3

Source: GATT, *Report on International Trade 1980–1987* (Geneva, 1987).

Table 1.2 The Growing Importance of Trade Within Product Groups in the Trade of the Developing Areas with the Developed Countries

Product Group	1970	1980	1986
Textiles	66	85	94
Household appliances	35	68	92
Raw materials	52	71	91
Nonferrous metals	35	71	84
Office and telecommunication equipment	22	68	84
Other semi-manufactures	55	61	84
Food	63	97	79
Other consumer goods	95	99	68
Ores and minerals	24	39	57
Iron and steel	19	21	49
Other machinery and transport equipment	12	22	45
Chemicals	17	28	35
Road motor vehicles	2	5	29
Clothing	47	30	17
Machinery for specialized industries	2	6	17
Fuels	8	5	13

Source: GATT, *Report on International Trade 1980–1987* (Geneva, 1987).

Note: For all product groups except food, clothing, and other consumer goods, the dollar values of exports and imports in the trade of the developing areas with the developed countries have become more balanced over time. This development is evident from the indexes presented. For each of the sixteen product groups shown in this table, the figures are calculated by taking the absolute amount of net trade of the developing areas with the developed countries (that is, exports minus imports, ignoring the question of whether it is a trade surplus or a trade deficit) as a percentage of gross trade (that is, exports plus imports), and adjusting it so that it becomes 100 if the dollar value of imports of an individual category precisely matches the dollar value of exports of that category (all figures are calculated on an f.o.b. basis). It becomes zero if there are only exports or only imports.

For example, in 1986 the developing areas exported chemicals worth $6.9 billion to the developed countries and imported chemicals worth $32.9 billion from them. The amount of net trade in chemicals was thus $26 billion, and gross trade was $39.8 billion. Net trade as a percentage of gross trade was 65 percent. The index represents the difference between that percentage and 100, namely 35. Thus, an increase over time in the percentages in the table indicates that trade in the particular product category is becoming more balanced (that is, net trade is becoming proportionately smaller)—a sign that countries are specializing more within the particular product category.

Table 1.3 Exports of Manufactures of Selected Economies, 1979–1981 and 1984–1986 (Annual Averages)

	Billion Dollars		Average Annual Percentage Change Between 1979–1981 and 1984–1986
	1979–1981	1984–1986	
Indonesia	0.5	2.3	35.5
Turkey	1.1	4.4	32.
Mexico	4.3	10.1	18.5
Malaysia	2.2	4.2[a]	15.5
Brazil	7.4	14.8	15.
Thailand	1.5	2.9	14.
Saudi Arabia	0.4	0.7[a]	13.
Taiwan	17.1	30.5	12.5
Korea, Republic of	16.0	28.7	12.5
Morocco	0.6	1.0	10.5
Singapore	8.5	12.4	8.
Pakistan	1.3	1.9	8.
Hong Kong	12.5	17.2	6.5
Tunisia	0.7	0.9	5.
Philippines	2.0	2.5[a]	5.
Yugoslavia	6.6	8.2	4.5
Israel	4.3	5.3	4.5
Bangladesh	0.5	0.6[a]	4.
India	4.4	4.7[a]	1.5
Colombia	0.7	0.6	–3.
Argentina	1.8	1.5	–3.5
Peru	0.5	0.4	–4.5
Uruguay	0.4	0.3	–4.5
Kuwait	2.1	1.1	–12.
Jamaica	0.6	0.3	–13.

Source: GATT, *Report on International Trade 1980–1987* (Geneva, 1987).

[a]1984–1985.

Note: The developing areas are ranked in descending order of the average annual percentage change of exports of manufactures between 1979–1981 and 1984–1986. The figures exclude exports and re-exports of gold. The data for Mexico include estimates for exports of manufactures from maquiladoras.

Table 1.4 Various Economic Indicators,[a] by Country, in the Asian Region

Country	% GNP in Industry[b]	% Labor Force in Manufacture	% Labor Force in Agriculture	% Exports Manufacture	% Labor Force Female	High-Tech Development[c]
India	18 (83)	11 (79)	74 (79)	62	26	C,D,I,X
China	42 (83)	17 (79)	71 (79)	—	44	C,D,I,X
Hong Kong	24 (83)	35	2	96	38	C,I,X
S. Korea	32 (84)	22	24	96	38	C,D,I,X
Malaysia	19[d]	12	38	50	33	C,I,X
Singapore	27 (84)	24	1	92	37	C,I,X
Taiwan	36 (84)	34	18	94	—	C,D,I,X
Indonesia	31 (83)	13	53	21	36	C,D
Pakistan	21 (84)	15	51	78	—	C,D,X
Philippines	28 (84)	9	47	81	38	C,X
Sri Lanka	18 (83)	8	37	36	26	C
Thailand	23 (84)	8	66	64	47	C,X
Bangladesh	9 (84)	9	58	70	9	
Burma	11 (84)	9	66	32	—	
Vietnam	—	—	—	—	—	
Afghanistan	4 (82)	12 (79)	60 (79)	16	8 (79)	
Bhutan	—	—	—	—	—	
Dem. Kampuchea	—	—	—	—	—	
Lao PDR	—	—	—	—	—	
Nepal	5 (83)	1	91	75	35	
Cook Islands	6 (78)	7 (81)	29 (81)	66	30 (81)	
Fiji	11 (83)	8 (76)	44 (76)	—	17 (76)	
Kiribati	—	—	—	—	—	
Maldives	6 (83)	—	—	—	—	
Papua N. Guinea	9[d]	10 (80)	76 (80)	16	—	
Solomon Islands	—	8 (83)	32 (83)	14	—	
Tonga	6 (83)	2 (76)	44 (76)	33	16 (76)	
Vanuatu	—	2	77	13	43	
W. Samoa	—	8 (81)	11 (81)	63	15 (81)	

Source: ILO, *Yearbook of Labour Statistics, 1986*; United Nations, *International Trade Statistical Yearbook, 1985*, Vol. 1; United Nations, *UN National Accounts Statistics, 1986*, Table 5; *Taiwan Statistical Yearbook, 1985*; *UN Statistical Yearbook for Asia and the Pacific, 1984*.

[a]Year for unmarked figure varies by country and category, but all are from 1981–1984.
[b]Industry defined as manufacturing plus mining.
[c]C = produces or assembles consumer electronic goods (television receivers, radios, etc.); I = produces or assembles investment electronic goods (microcomputers, etc.); D = produces high-tech military goods; X = exports electronic goods and services.
[d]Manufacturing only (Malaysia = 35% for manufacturing + mining [petroleum and tin]; PNG = 23% for manufacturing + mining [gold]).

(Table compiled by Martin Carnoy, Stanford University.)

Table 1.5 The Growth of Maquiladoras in Mexico

Year	No. of Maquilas (Monthly Average)	% Change	No. of Workers (Monthly Average)	% Change	Average Workforce per Plant
1965	12	—	3,000	—	250
1969	152	1166.67	17,000	466 67	112
1970	120	–21.05	20,327	19.57	169
1971	209	74.17	20,000	–1.61	96
1972	339	62.20	48,060	140.30	142
1973	257	–24.19	64,330	33.85	250
1974	455	77.04	75,977	18.11	167
1975	454	–0.22	67,213	–11.54	148
1976	448	–1.32	74,496	10.84	166
1977	443	–1.12	78,433	5.28	177
1978	457	3.16	90,704	15.65	198
1979	540	18.16	111,365	22.78	206
1980	620	14.81	119,546	7.35	193
1981	605	–2.42	130,973	9.56	216
1982	585	–3.31	127,048	–3.00	217
1983	600	2.56	150,867	18.75	251
1984	672	12.00	199,684	32.36	297
1985	760	13.10	211,968	6.15	279
1986	891	17.24	249,833	17.86	280
1987[a]	1132	27.05	307,866	23.23	272

Source: Calculations based on official figures cited by Martinez del Campo for 1965–1976; based on SPP and INEGI for 1977–1987.

[a]To July of 1987.

(Table compiled by Anibal Yánez, University of California at Berkeley.)

Table 1.6 Developing Countries: Foreign Direct Investment, Capital-Goods Imports, and Technical Assistance From DMECs (Billions of Dollars)

Item	Developing Countries: By Region					By Analytical Group				By Income Group		
	Total[a]	America	Africa	Asia	Oceania	Major Petroleum Exporters	Major Exporters of Manufacture	Least Developed Countries	Other Developing Countries	$ per Capita Less than $500	$500–$1500	Above $1500
A. Stock of FDI												
1971	42.5	25.1	8.4	10.2	0.5	15.8	8.5	0.8	19.0	5.7	10.0	26.8
1978	84.9	50.6	11.1	22.5	1.3	23.1	22.2	1.6	38.6	13.3	15.7	55.9
B. Foreign Direct Investment												
1979	8.5	5.5	1.8	1.1	0.1	0.3	3.8	0.4	4.1	2.0	1.5	5.0
1980	6.8	6.2	0.2	0.3	0.1	–1.5	4.1	0.3	4.0	1.2	0.9	4.7
1981	21.4	7.7	1.7	11.8	0.1	10.5	5.3	0.2	5.4	1.5	2.9	17.0
1982	22.7	6.4	1.5	14.7	0.1	13.4	4.9	0.2	4.3	1.0	2.2	19.5
1983	13.7	3.6	1.5	8.4	0.2	6.0	3.3	0.1	4.4	1.1	2.6	10.0
1984	13.0	3.3	1.5	8.0	0.2	5.8	3.5	0.1	3.5	1.2	2.1	9.7
1979–1984 (average)	14.4	5.5	1.4	7.4	0.1	5.7	4.1	0 2	4.3	1.3	2.0	11.0
C. Capital-Goods Imports												
1979	96.6	24.8	19.6	47.6	0.5	40.3	25.0	2.8	28.2	11.2	19.9	65.6
1980	111.4	29,5	23.1	54.5	0.6	48.8	26.5	3.1	32.6	13.9	22.9	74.6
1981	126.5	33.7	26.0	63.3	0.6	61.0	26.6	2.8	35.8	14.2	25.6	86.7
1982	119.2	28.0	22.1	66.2	0.5	56.6	24.4	2.6	35.3	16.3	22.2	80.7
1983	104.0	19.5	17.9	64.1	0.4	44.5	23.5	2.3	33.1	14.6	18.7	70.7
1984	104.1	23.2	17.2	61.3	0.4	40.7	26.7	2.2	34.2	13.6	17.7	72.8
1979–1984 (average)	110.3	26.4	21.0	59.5	0.5	48.7	25.4	2.6	33.2	14.0	21.2	75.2

D. Official Technical Assistance[b]												
1979	3.6	0.8	2.2	0.7	0.2	0.4	0.1	0.8	2.3	1.4	0.9	1.2
1980	4.4	1.0	2.5	0.9	0.3	0.5	0.2	1.0	2.8	1.8	1.2	1.4
1981	4.1	0.9	2.3	0.9	0.3	0.4	0.1	1.0	2.5	1.8	1.2	1.1
1982	4.0	0.8	2.3	0.9	0.3	0.4	0.1	1.0	2.4	1.9	1.1	1.0
1983	4.5	0.8	2.6	1.2	0.3	0.4	0.1	1.0	2.9	2.1	1.3	1.1
1984	4.4	0.8	2.5	1.1	0.3	0.4	0.1	1.0	2.8	2.2	1.3	1.1
1979–1984 (average)	4.2	0.9	2.4	0.9	0.3	0.1	0.1	1.0	2.6	1.9	1.2	1.1
Memo item:												
GDP in 1979	1829.0	681.0	263.0	822.0	7.0	686.0	519.0	58.0	567.0	311.0	356.0	1162.0
Population in 1979 (billions)	2.2	0.4	0.4	1.4	—	0.4	0.2	0.3	1.3	1.3	0.4	0.5

Sources: Foreign direct investment: IMF, *Balance of Payments Yearbook*, various years; capital-goods imports: UNCTAD secretariat calculations based on United Nations Statistical Office Trade Data (Comtrade), technical assistance: OECD, *Development Co-operation*, various issues.

[a]Including Malta and Yugoslavia, which are not allocated to a region.
[b]Unallocated figures are included in regional totals only.

Table 1.7 Selected Science and Technology Indicators[a]

Indicator	Year	Developed Market-Economy Countries	Developing Countries by Region				Selected Developing Countries			
			Total	Africa	Asia	Latin America	Argentina	India	Republic of Korea	Singapore
1. Estimated number of of scientists and engineers engaged in R & D (per million population)	1970	2,317	84	56	81	135	271[b]	187[c]	160[d]	175[b]
	1980	2,986	127	91	115	251	359[f]	131[f]	803[g]	296[e]
2. Estimated expenditure for research and experimental development (percentage of GNP)	1970	2.4	0.3	0.3	0.3	0.3	0.3[e]	0.4[e]	0.3[e]	—
	1980	2.2	0.5	0.3	0.5	0.5	—	0.7[f]	1.1[g]	0.3[e]
3. Professionals and technicians as a percentage of economically active population	1970	11.1	5.5	4.4	4.3	7.7	—	2.7	4.1	7.7
	1980	14.3	7.5	5.4	5.6	8.2	—	2.9	4.6	9.4
4. Literacy rate (percent)	1970	98.0	57.6	18.2	40.1	83.6	92.6	33.4	87.6	68.9
	1983	98.0	74.0	45.4	71.4	90.3	95.5	43.5	87.6	86.1

5. Ratio of primary and secondary enrollment to school-age population (percent)	1970	91.5	61.0	42.0	56.0	76.0	80.0	41.0	76.0	77.0
	1983	94.0	72.5	53.5	70.0	87.0	89.0	58.0	96.0	80.0

Sources: Indicators 1, 2, 4 and 5: UNCTAD secretariat calculations, based on UNESCO, *Statistical Yearbook 1986*, Tables 5.1, 5.2, and 5.4; Indicator 3: ILO data bank.

[a]The indicators shown are estimated on the basis of samples of countries. The size of the samples is governed by the availability of data.
[b]1971.
[c]1970.
[d]1972.
[e]1981.
[f]1982.
[g]1983.

Table 1.8 World Consumption and Prices of Major Raw Materials[a] (Percentages and Constant U.S. Dollars)

Commodity	Average Annual Rates of Growth in Consumption[b] (Percentages)			Price[c] (Dollars)				
	1969/71–1979/81	1979/81–1984/86	Projected 1984/86–2000	Unit	1969/71	1979/81	1985	Projected 2000
Agricultural nonfood[d]	1.99	0.66	1.42	—	—	—	—	—
Cotton	1.81	1.78	1.52	lb[e]	1.72	1.51	1.56	1.38
Jute	1.06	–0.74	1.43	mt[f]	7.76	3.21	5.83	3.00
Natural rubber	2.31	2.07	2.22	lb	.61	.64	.42	.50
Tobacco	2.15	1.96	1.68	lb	1.21	1.01	.86	.79
Timber	2.04	–0.62	1.13	n.a.	n.a.	n.a.	n.a.	n.a.
Metals and minerals[d]	2.75	0.61	1.32	—	—	—	—	—
Copper	2.49	0.86	1.44	lb	1.66	0.88	0.64	0.73
Iron ore	2.01	–0.43	0.68	mt	37.00	24.00	23.00	14.00
Tin	0.22	–3.21	–1.05	lb	4.33	6.75	5.41	3.34
Nickel	2.83	0.97	1.06	lb	3.38	2.75	2.23	1.69
Bauxite	4.21	0.14	1.95	mt	33.00	39.00	30.00	26.00
Lead	1.52	0.21	0.42	lb	.35	.43	.18	.17
Zinc	1.31	1.84	1.27	lb	.37	.35	.36	.36

Source: World Bank, *Price Prospects for Major Primary Commodities*, Vols. I, III, and IV, Annex Tables (October 1986).

[a]Excluding foods, beverages, and fuels.
[b]Evaluated in 1979/81 average prices.
[c]Average price. Current dollars deflated by manufacturing unit value (MUV) index: 1985 = 100.
[d]Weighted average.
[e]Pound.
[f]Metric ton.
n.a. = not available

Table 1.9 Electronic Products: Major Exporters, 1983–1986 (Billion Dollars)

	Electronic Products				Automatic Data-Processing Machines				Telecommunication Equipment			
	1983	1984	1985	1986	1983	1984	1985	1986	1983	1984	1985	1986
Developed countries	84.20	102.68	108.90	131.45	27.70	35.67	40.05	48.80	17.90	19.60	21.25	26.40
Japan	26.78	35.50	36.26	45.27	3.70	5.68	5.96	9.39	5.24	6.64	7.29	10.06
United States	23.09	27.29	26.49	28 20	10.60	13.46	13.93	14.52	3.30	3.42	3.66	3.86
Germany, Federal Republic	8.56	9.25	10.72	14.92	2.96	3.23	4.08	5.59	1.89	1.84	1.97	2.66
United Kingdom	5.90	7.34	8.77	9.88	2.51	3.49	4.30	4.55	1.26	1.13	1.24	1.43
France	4.51	5.02	5.86	7.35	1.86	2.12	2.35	3.31	1.22	1.20	1.40	1.60
Netherlands	3.00	3.55	3.67	4.84	1.06	1.38	1.60	2.05	0.69	0.66	0.56	0.77
Canada	2.44	3.41	3.47	3.23	1.05	1.35	1.36	1.34	1.03	1.41	1.37	1.19
Italy	2.51	2.82	3.62	4.46	1.03	1.18	1.83	2.16	0.66	0.79	0.83	1.03
Ireland	1.45	1.99	2.28	2.79	1.18	1.64	1.93	2.44	0.10	0.12	0.13	0.17
Sweden	1.76	1.85	2.24	2.51	0.66	0.64	0.82	0.96	0.93	1.01	1.22	1.30
Belgium-Luxembourg	1.31	1.32	1.40	2.44	0.35	0.41	0.46	0.74	0.46	0 38	0.40	0.67
North America	25.53	30.70	29.86	31.43	11.65	14.81	15.30	15.86	4.32	4.83	5.03	5.05
Excluding intratrade	21.18	24.69	23.89	25.98	9.47	11.70	12.02	12.90	3.39	3.58	3.76	3.88
EC(12)	28.30	32.79	38 04	48.80	11.25	14.07	17.34	21.78	6.57	6.41	6.88	8.68
Excluding intratrade	11.85	13.76	16.19	19.02	3.47	4.46	5.68	6.71	4.12	4.11	4.56	5.39
EFTA(7)	3.59	3.70	4 35	5.69	1.07	1.10	1.41	1.77	1.59	1.61	1.87	2.37
Developing areas												
Taiwan	3.23	4.44	4.25	6.12	0 15	0.80	1.02	1.95	1.07	1.25	1.05	1.34
Korea, Republic of	2.67	3.70	3.70	5.72	0 21	0.40	0.55	0.94	0.47	0.46	0.53	0.84
Hong Kong[a]	2.04	2.80	2 25	2.65	0.63	1.04	0.79	0.75	0.53	0.64	0.59	0.75
Singapore[b]	3.36	4.34	4.19	5.42	0.64	1.12	1.25	1.92	0.39	0.48	0.46	0.48
Malaysia	1.93	2.42	2 20	2.30	0.01	0.03	—	—	0.11	0.12	—	—
Philippines[c]	1.02	1.31	0.95	0.93	—	—	—	—	—	—	—	—
Mexico[c]	1.49	1.79	1.96	2.13	0.17	0.28	0.31	0.30	0.83	0.88	0.78	0.92
Brazil[c]	0.30	0.44	0.49	0.66	0.09	0.10	0.13	0.15	0.02	0.03	0.04	0.06

Source: UNESCO, Comtrade data base; GATT, *Report on International Trade 1986–1987* (Geneva, 1987).

[a]Domestic exports only.
[b]Exports include re-exports.

Table 1.9—continued

Consumer Electronics				Electronic Parts				Business Electronics			
1983	1984	1985	1986	1983	1984	1985	1986	1983	1984	1985	1986
14. 90	17.70	18.70	21.40	12.60	17.30	15.65	19.25	11.34	12.59	13.35	15.60
11. 06	13.66	14.17	14.82	3.73	5.82	4.75	6.34	3.05	3.71	4.07	4.66
0.47	0.49	0.49	0.53	4.72	5.76	4.65	5.45	3.99	4.17	3.76	3.85
1.24	1.30	1.50	2.33	1.14	1.49	1.45	1.80	1.32	1.38	1.72	2.55
0.24	0.37	0.43	0.62	0.71	1.04	1.30	1.42	1.18	1.31	1.50	1.86
0.16	0.16	0.18	0.29	0.68	0.88	1.00	1.27	0.59	0.66	0.94	0.89
0.22	0.19	0.28	0.36	0.49	0.63	0.65	0.87	0.55	0.68	0.58	0.80
0.12	0.14	0.14	0.14	0.24	0.51	0 58	0.55	—	—	—	—
0.17	0.13	0.15	0.26	0.39	0.47	0.53	0.66	0.26	0.25	0.27	0.37
0.01	0.01	0.01	0.02	0.13	0.19	0.16	0.12	0.03	0.04	0.05	0.04
0.09	0.12	0.12	0.13	0.04	0.04	0.05	0.08	0 04	0.04	0.04	0.05
0.39	0.39	0.42	0.82	0.04	0.05	0.06	0.11	0.06	0.09	0.07	0.11
0.59	0.62	0.63	0.67	4.96	6.27	5.23	6.00	4.00	4.17	3.77	3.86
0.34	0.31	0.36	0.37	4.46	5.46	4.46	5.05	3.53	3.63	3.29	3.47
2.64	2.79	3.21	5.16	3.64	4.89	5.26	6.34	4.19	4.63	5.36	6.91
0.82	0.85	0.93	1.23	1.27	1.79	1.92	2.24	2.16	2.56	3.10	3.61
0.60	0.57	0.60	0.88	0.24	0.32	0.37	0.54	0.09	0.09	0.10	0.13
1.34	1.50	1.30	1.73	0.55	0.74	0.70	0.89	0.12	0.13	0.18	0.21
1.08	1.40	1.44	2.27	0.88	1.34	1.14	1.61	0.04	0.05	0.05	0 06
0.62	0.77	0 56	0.74	0.19	0.26	0.22	0.23	0.08	0.10	0.09	0.18
0.90	1.01	0.97	1.21	1.36	1.66	1.39	1.68	0.08	0.08	0.11	0.12
0.14	0.18	—	—	167	2.09	—	—	0.00	0.00	—	—
—	—	—	—	093	1.23	0.90	0.86	—	—	—	—
0.30	0.37	0.59	0.62	0.19	0.26	0.25	0.30	0.01	0.01	0.01	0.01
0.13	0.25	0 24	0.37	0.05	0.06	0.06	0.08	0.00	0.01	0.01	0 01

[c]Imports of developed countries and major developing exporters from the respective country.

Table 1.10 Electronic Products: Major Importers, 1983–1986 (Billion Dollars)

	Electronic Products				Automatic Data-Processing Machines				Telecommunication Equipment			
	1983	1984	1985	1986	1983	1984	1985	1986	1983	1984	1985	1986
Developed countries	76.00	96.90	103.75	125.70	26.63	35.35	39.66	49.60	13.03	15.47	16.89	20.42
Japan	2.94	3.74	3.69	4.40	0.98	1.32	1.50	1.64	0.40	0.44	0.44	0 59
United States	23.78	35.53	36.98	42.58	4.76	8.08	8.47	11.46	5.52	7.61	8.07	8.91
Germany, Federal Republic	8.88	9.93	11.06	14.83	3.38	3.95	4.83	6.39	1.10	1.11	1.24	1.82
United Kingdom	9.19	10.30	11.00	12.81	3.83	4.81	5.07	5.77	1.09	1.08	1.21	1.65
France	5.84	6.19	6.92	9.42	2.70	2.93	3.46	4.58	0.64	0.59	0.61	0.83
Netherlands	3.45	3.94	4.49	6.06	1.57	1.90	2.31	2.99	0.47	0.46	0.54	0.78
Canada	5.03	6.91	6.22	6.67	2.35	3.28	2.89	3.02	0.81	0.98	1.01	1.19
Italy	3.65	4.53	5.37	6.90	1.32	1.72	2.28	2.70	0.50	0.56	0.60	0.75
Ireland	1.02	1.37	1.42	1.55	0.69	1.00	1.02	1.15	0.11	0.11	0.11	0.12
Sweden	1.61	1.87	2 24	2.52	0.85	0.85	1.07	1.24	0.22	0 29	0.37	0.49
Switzerland	1.32	1.55	1.78	2.58	0.60	0.73	0.90	1.29	0.19	0.22	0.27	0.41
Spain	1.64	1.96	2.15	(2.50)	0.63	1.07	1.22	—	0.24	0.21	0.22	—
Belgium-Luxembourg	1.59	1.75	1.95	2.90	0.66	0.80	0.94	1.29	0.29	0.25	0.29	0.39
North America	28.80	42.44	43.21	49.75	7.11	11.37	11.36	14.48	6.33	8.58	9.08	10.10
EC(12)	36.57	41.45	46.04	59.45	15.28	18.75	21.81	27.25	4.75	4.68	5.17	7.10
EFTA(7)	5.22	6.12	7.09	9.44	2.39	2.76	3.39	4.49	0.94	1.04	1.29	1.88
Other countries and areas												
Taiwan	1.44	2.10	1.91	2.97	0.14	0.30	0.34	0.52	0.36	0.41	0.40	0.61
Korea, Republic of	2.17	2 65	2.50	3.67	0.29	0.34	0.41	0.72	0.64	0.61	0.55	0.66
Hong Kong[a]	2.61	3.95	3.71	4.13	0.42	0.79	0.70	0.66	0.42	0.62	0.68	0.83
Singapore[a]	3.11	3.78	3.53	4.49	0.47	0.75	0.74	0.85	0.40	0.47	0.46	0.60
Malaysia	2.10	2.48	—	—	0.10	0.12	—	—	0.29	0.28	—	—
China[b]	0.86	2.27	4.30	2.82	0.16	0.48	0.69	0.59	0.27	0.60	1.02	1.17
Saudi Arabia[b]	1.65	1.52	1.50	1.09	—	—	—	—	0.72	0.69	0.76	0 55

Source: UNESCO, Comtrade data base; GATT, *Report on International Trade 1986–1987* (Geneva, 1987).

[a]Including imports for re-exports

[b]Exports of developed countries and major developing exporters to the respective country.

Table 1.10—continued

Consumer Electronics				Electronic Parts				Business Electronics			
1983	1984	1985	1986	1983	1984	1985	1986	1983	1984	1985	1986
14. 96	17.63	20.00	24.51	13.06	18.93	16.89	18.80	8.36	9.50	10.20	12.35
0.07	0.08	0.08	0.16	0.91	1.29	1.02	1.22	0.59	0.60	0.65	0.79
6.10	8.82	11.05	12.25	5.45	8.32	6.29	6.62	1.94	2.69	3.10	3.34
1.76	1.71	1.62	2.35	1.52	2.01	2.12	2.56	1.11	1.16	1.25	1.72
1.81	1.40	1.54	1.88	1.13	1.63	1.75	1.85	1.32	1.38	1.44	1.67
0.82	0.78	0.82	1.46	0.77	1.02	1.08	1.29	0.92	0.88	0.95	1.26
0.62	0.59	0.65	0.99	0.42	0.60	0.56	0.67	0.38	0.38	0.43	0.42
0.84	1.14	1.02	1.09	0.70	1.11	0.95	0.98	0.33	0.40	0.37	0.39
0.57	0.60	0.73	1.17	0.59	0.88	0.95	1.19	0.66	0.77	0.81	1.09
0.05	0.04	0.07	0.08	0.13	0.18	0.17	0.15	0.04	0.04	0.05	0.05
0.24	0.27	0.30	0.38	0.22	0.37	0.41	0.32	0.08	0.08	0.08	0.09
0.32	0 33	0.32	0.49	0.12	0.19	0.19	0.25	0.09	0.10	0.09	0.14
0.38	0.30	0.29	—	0.15	0.15	0.14	—	0.24	0.24	0 28	—
0.25	0.27	0.28	0.48	0.21	0.22	0.25	0.47	0.18	0.21	0.19	0.27
6.94	9.56	12.06	13.34	6.15	9.43	7.24	7.60	2.28	3.10	3.47	3.73
6.45	5.90	6.27	9.24	5.11	6.90	7.22	8.58	4.98	5.22	5.57	7.28
0.95	1.04	1.04	1.50	0.66	0.98	1.08	1.17	0.28	0.29	0.28	0.40
0.04	0.03	0.02	0.06	0.83	1.22	1.00	1.60	0.08	0.14	0.14	0.18
0.15	0.16	0.13	0.20	0.92	1.30	1.13	1.66	0.17	0 24	0.28	0.43
0.46	0.74	0.87	0.95	1.16	1.60	1.20	1.50	0.15	0.21	0.26	0.19
0.62	0.61	0.57	0.77	1.45	1.77	1.55	2.04	0.17	0.18	0.22	0.23
0.16	0.17	—	—	135	1.53	1.86	—	0.03	0.05	—	—
0.16	0.67	1.65	0.38	0.07	0.20	0.42	0.29	0.20	0.33	0.52	0 39
0.53	0.52	0.46	0.30	—	—	—	—	—	—	—	—

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chapter two

Structural Change and Trade in the East Asian Newly Industrial Economies and Emerging Industrial Economies

Carl J. Dahlman

Trade, Technology, and Development

The world economy is undergoing tremendous structural transformation as a result of both the widely varying rate of development of different economies and the nature and rate of technological change. Economic development consists of the application of human, material, and technological resources to satisfy an ever-increasing range of wants. Technology and technological change are important because they make it possible to transform natural resources into finished products. They also make it possible to exploit more of the potential of natural resources and to obtain more output from the same inputs, as well as to expand the range of goods and services that can be produced. Economic development thus consists largely of the successful application of technology to the satisfaction of wants.

Economies are endowed with different natural, human, and technological resources. All can be developed further in various ways. Some economies try to advance by relying mostly on their own resources. Others try to advance by augmenting their resources through international trade. Trade can be in commodities, manufactured goods, services, and technology itself. The focus here will be on the links among trade, technology, and development.

The links between technology and trade are varied. First, the development of new technology can lead to new patterns of trade. New product or service technology can lead to new exports from those countries that have the new technology to those that do not. New or better process technology can lead to the reduction of costs or to improvements in price performance, which can change the comparative advantage between those countries that have access to

the new technology and those that do not. Many of the patterns of trade in manufactures are not just the results of differences in natural resource and factor endowments; they are also the result of differences in technology.

Second, technology itself can be traded. This trade can be explicit, as when a technology developed in one country is licensed for use in another, or when technical assistance or technical services are sold. It can also be implicit, as when a company holding the technology sets up a subsidiary to produce in a foreign country. Some technology can also cross national boundaries indirectly, such as through copying, imitation, reverse engineering, and foreign study.

Third, trade itself can lead to technology transfer. This occurs when capital goods or intermediate products embodying new technology are exported and used in foreign production processes. In addition, large buyers and contractors often transfer a lot of technology when they specify what they want to have produced by foreign subcontractors and how to produce it.

These links between technology and trade are becoming even more important in the increasingly internationalized world economy. Nations and firms are finding that they need to pay more attention to trade and to technology. Technology is increasingly becoming a competitive weapon in trade. Whether and how to give access to technology now requires more thinking and planning. So does the location of production, particularly given the strong protectionistic pressures that currently exist in many markets. Moreover, in our increasingly interdependent world, the way in which a large economy or a group of economies approaches such related issues as trade and technology will affect almost every other economy.

The objective of this chapter is to analyze some of the major aspects of the role of trade and technology in the performance and structural change in eight East Asian economies—the famous four Asian newly industrializing economies (NIEs), as well as four near NIEs (Indonesia, Malaysia, Philippines, and Thailand). Sections two and three provide an overview of the performance and structural change in these eight economies. Section two summarizes the emergence of these economies in world production and manufacturing. Section three analyzes their emergence in world markets. Section four then analyzes the role of various elements of trade in technological development and of local technological efforts in these countries' development. Finally, section five outlines some key issues for technology and trade in these East Asian

economies with respect to their relationships with the rest of the world, particularly the industrialized countries.

The Emergence of the East Asian Economies and Their Changing Structure of Production

Gross National Product Growth Per Capita

One of the most notable characteristics of the economies of Korea, Hong Kong, Singapore, and Taiwan (which have variously been referred to as the "four tigers" or "four little dragons," and which will be referred to in this examination as the four Asian NIEs) has been their extremely high rate of growth of gross national product (GNP) per capita over a long period (see Table 2.1). Between 1965 and 1986 the annual per capita GNP growth rate was above 6 percent in each of these countries; hence they are considered to be the fastest growing among the major trading economies in the world.[1] This figure is more than twice the average for the low-income, middle-income, or industrial market group of economies (Table 2.1).[2] In Japan, which was the best performer among the industrialized economies, per capita GNP grew at 4.3 percent in the same period; in the United States per capita GNP grew only 1.6 percent.

Among the emerging East Asian NIEs, all but the Philippines had per capita GNP growth rates above the averages for the rest of the world. At 4.6 percent this growth rate was particularly high for Indonesia, the largest though still the poorest of the four. Malaysia, the smallest of this subgroup, had a growth rate as good as that of Japan as well as a 1986 per capita income that compared favorably with that of the two Latin American NIEs, Brazil and Mexico.

Shares in World Gross Domestic Product and Manufacturing Value Added

As a result of their rapid economic growth between 1965 and 1986, seven East Asian countries (all but the Philippines) have increased their shares in world gross domestic product (GDP) above the average for low-income, middle-income, and industrial-market economies (see Table 2.2). The most impressive changes in shares have been Korea's 345 percent increase and Taiwan's 263 percent increase (both considerably above the 186 percent increase achieved by Japan), followed by Indonesia's 164 percent increase. The Philippines was the only country in the group that lost world share (32 percent). Industrial-market economies as a group, on the other hand, barely maintained their world share of GDP, and the United States actually lost 20 percent of its world share.

The eight East Asian economies have made even more impressive increases in their share of world manufacturing value added over the period 1970 to 1986. All of these economies, even the Philippines, increased their share above the average for all other groups of economies except the high-income oil exporters (see Table 2.3). Taiwan had the most impressive increase of any economy, with an increase in share of 579 percent; Korea had an increase of 259 percent, and Indonesia had an increase of 222 percent. All of them, except the Philippines, had a greater increase than the Latin American NIEs. Although the developing economies as a whole maintained or gained world shares, the industrialized market economies as a group lost 6 percent of their share. (At the same time, Japan increased its share by 50 percent, whereas the United States lost 12 percent of its share.)

Structure of Production and Manufacturing

The rapid growth of these East Asian economies has been accompanied by large changes in the structure of their production and manufacturing. These changes vary, however. In terms of broad production structure, the greatest change has occurred in Indonesia, Korea, and Taiwan, which have experienced absolute changes of forty percentage points or more in the distribution of production among agriculture, industry, and services between 1965 and 1986 (see Table 2.4). Such large changes were due primarily to a fall of twenty to thirty percentage points in the share of agriculture and a rise of seventeen to twenty percentage points in the share of industry. The fall of agriculture's share of production in an economy relative to industry's has been one of the main characteristics of the process of industrial development. By 1986 Taiwan, Korea, and Singapore had a greater share of production in industry than the average for the industrial market economies. Taiwan is noteworthy in that it has the highest share of production in industry (47 percent) among all world economies.

Hong Kong is singular in that its share of production in industry (40 percent), which was the highest among the East Asian NIEs in 1965, actually decreased eleven percentage points over the period. It thus shows a trend that is more consistent with that of the industrial market economies, where the share of production in industry is falling while that in services is rising. However, Hong Kong has the highest share of production in services among all economies in the world. Singapore is special for the opposite reason. In 1965 it had the highest share in services among all economies, and it is one of the few economies where the share in services has fallen over time. That

reflects its transition from a service-oriented entrepôt economy to an industrial one, inasmuch as the share in agriculture has not changed much (although Singapore is now making a second transformation into a higher value-added service economy). Thailand is special in that it has a lower share of production in agriculture than Indonesia or the Philippines but still has a higher share of employment in that sector, indicating very low worker productivity in agriculture.[3] The Philippines is remarkable in that it exhibited only a very small change in the structure of production between 1965 and 1986—a change that is considerably lower than that of even the industrial-market economies.

With respect to the five-way disaggregation of the structure of manufacturing, between 1970 and 1986 the largest changes occurred in Singapore (fifty percentage points), Malaysia (thirty-eight points), Thailand (twenty-six points), and Korea (twenty-five points). Unfortunately, the data for computing the changes for Indonesia and Taiwan are not available, but one can assume that both economies showed significant change. At the other extreme, Hong Kong and the Philippines showed the smallest change in the percentage distribution of manufacturing value added (see Table 2.5). Hong Kong was very industrialized even as far back as 1965 (as seen in Table 2.4); thus, it shows relatively little change at the broad level of aggregation being analyzed here, as is generally the case with industrialized market economies.[4] In the Philippines, however, the small change appears to be reflective of much less dynamism in the economy.

As the machinery and transport equipment sector (which includes electrical and electronic goods) of an economy is usually regarded as one of the most technology-intensive manufacturing sectors, it is relevant to note its importance in the East Asian economies. Singapore has the highest share of machinery and transport equipment, at 49 percent, which is about one-third higher than the highest in any industrial-market economy. (This sector accounts for 38 percent of the West German economy.) It is followed by Malaysia and Korea, with 23 percent each. At the other extreme are Indonesia, the Philippines, and Thailand, which have only 10–13 percent of manufacturing value added in the sector.

We can conclude from this analysis that there are significant differences between the performance of these NIEs and the other four East Asian economies. The difference is clearest in the category of GNP growth per capita. In terms of increases of their share of world GDP, however, Indonesia has done better than Hong Kong and Singapore. Furthermore, in terms of growth in world share of manufacturing value added, both Indonesia and Thailand have done

better than Hong Kong, thus revealing some of the underlying strength of these emerging East Asian NIEs. The Philippines, on the other hand, has performed much less impressively than the average for middle-income economies in growth of GDP and growth of manufacturing value added. As it has also experienced the smallest relative change in the structure of production, the implication is that it may be much less dynamic than the other members of this group.

The Emergence of East Asian Economies in World Trade

World Export Shares

Because the East Asian economies have been more export oriented than most economies, they have increased their share of world trade more quickly than they have increased either their share of world GNP or their share of world manufacturing value added. As a result, in 1986 their shares of world exports were greater than their shares of world GDP (see Table 2.6). This was particularly true for Singapore, Hong Kong, Taiwan, Malaysia, and Korea.[5]

At finer levels of disaggregation, the shares of these economies in world trade increase further for some categories. In 1985, for example, at the Standard International Trade Classification (SITC) one-digit level of disaggregation, Singapore had five commodity groups in which it was responsible for more that 1 percent of world exports; Taiwan had four, Korea three, the Philippines two, and Hong Kong and Thailand one each (see Table 2.7). The different world market shares of these economies also reveal their main export strengths. Korea is strong only in three categories of manufactured goods. Taiwan is strong in the same three manufacturing categories, but also has some strength in the areas of food and live animals. Hong Kong is strong only in miscellaneous manufactured goods. Singapore, on the other hand, is very strong in animal and vegetable oils and fats, mineral fuels, and crude materials, and is moderately strong in machinery and transport equipment (mainly electrical machinery and equipment). The Philippines is strong only in goods not classified by kind (i.e., it was a big exporter of noncurrent coins) and in animal and vegetable oil and fat. Thailand shows some strength only in food and live animal exports.

At the two-digit level of disaggregation, there is an increase in the number of commodity groups in which these economies have more than even 3 percent of world exports. Korea and Taiwan each have twelve such groups, Hong Kong has seven, Singapore six, Thailand five, and the Philippines just three.[6] Table 2.8 presents the top five commodities in world market shares for each of these

economies. There is a very close parallel in the structure for Korea and Taiwan, which are primarily exporters of manufactured commodities. They not only share three commodities (travel goods, footwear, and clothing) among their top five, but the rank ordering of the first two is the same. They also share two of those three (clothing and travel goods) with Hong Kong. The structure of Singapore's top five is closer to that of the Philippines and Thailand inasmuch as it is nonmanufacturing based and actually shares one commodity group with each country (rubber with Thailand, vegetable oil and fat with the Philippines). The Philippines and Thailand share two agricultural commodities (sugar preparations and fruits and vegetables) among their top five.

Changes in the Structure of Exports

At the same time that these economies have increased their participation in world trade, they have dramatically changed the composition of their trade structure. The emerging NIEs have reduced their share of fuels, minerals, and other primary commodities from 95 percent of merchandise exports to between 40 and 79 percent of such exports. The NIEs, except Singapore, have reduced that share to 9 percent or less—that is, to less than half the average for industrial economies. In all of the East Asian economies except Hong Kong, the change in trade structure has been greater than the average for other types of economies (see Table 2.9). Hong Kong has shown the lowest change because, as far back as 1965, 92 percent of its merchandise exports were already manufactured goods, and even then it had a larger share of exports of other manufactures than the industrial-market economies. However, Hong Kong has the lowest share of exports among the East Asian NIEs in machinery and transport equipment. The Philippines has shown the greatest change in trade structure, largely because of a shift from other primary commodities into other manufacturing. However, together with Indonesia, it has the lowest shares of exports in machinery and transport equipment among the eight NIEs. Taiwan has shown the second-highest structural change, having shifted, much like the Philippines, out of primary commodities and mostly into other manufacturing, but with a larger share of exports in machinery and transport equipment.

Changes in Revealed Comparative Advantage, 1965–1985

Another way to see the changing strengths of these economies in world trade is by analyzing changes in their revealed comparative advantage (RCA).[7] Appendix Tables 2A.1–2A.6 compare the top ten

commodities at the SITC two-digit level in which these economies showed RCA in 1965 with the top ten in which they showed RCA in 1985. Also identified among the commodities that showed RCA in 1985 are those that experienced the fastest growth in RCA between 1980 and 1985. These could be seen as the up-and-coming sectors during that period. Table 2.10 presents a summary of that analysis.

In all of the economies except Hong Kong and the Philippines, an increase has occurred in the number of manufactured commodities among the top ten with RCA. That trend is strongest in Taiwan and Korea. It is also strong in Thailand, where three of the five new commodities among the top ten are manufactured products (clothing, wood and cork manufactures, and nonmetal mineral manufactures), lending some credence to the idea that Thailand may be an emerging NIE. In Singapore, two new manufactured commodities (wood and cork, and electrical machinery) have made the top-ten list. The Philippines has experienced no change in the number of manufactured commodities, but some change has occurred in the composition of nonmanufacturing commodities among the top ten. However, there are some signs of growing comparative advantage in two manufactured commodities—namely, fertilizers and furniture, which had positive growth rates in RCA during the last five years analyzed. The fact that these changes are less apparent for the Philippines than for Thailand again supports the idea that the Philippines lags behind the other economies in the group. Hong Kong, on the other hand, appears to be moving out of manufactured products. Footwear, furniture, and metal manufactures (which used to be among the top ten) have dropped out, and only one manufactured commodity group (instruments, watches, and clocks) has come to the fore. The net loss, then, is two manufactured commodities. Thus, as in Hong Kong's internal structure of production, merchandise trade reflects the declining importance of a nation's manufacturing sector.

Technology and Trade

Much of East Asia's economic success can be attributed to a high level of technological development. As noted in the introduction to this volume, technology can be transferred directly or indirectly in many ways. Technology can also be developed through indigenous efforts. This section attempts to give a quick overview of foreign technology inflows, the role of foreign investment, the technical human capital base, and indigenous technological efforts in the East Asian economies.

Foreign Technology Inflows

Some of the most obvious forms of technology inflows are technology licensing, imports of capital goods, and the inflows implicit in foreign investment. Although data regarding payments for technology licensing and technical assistance are incomplete, there is no doubt that these forms of technology imports have been important for the East Asian economies. Some countries, such as Korea, initially had rather strict controls on such payments. However, as Korea has moved into the area of higher-technology products, a liberalization of such controls has occurred. Korea has realized that it is necessary to permit higher royalty payments in order to obtain the more advanced technology it needs.

Imports of capital goods and turnkey plants have also been important sources of foreign technology, inasmuch as capital goods are a form of embodied technology. As can be seen from Table 2.11, capital-goods imports have accounted for one-sixth to more than one-half of gross domestic investment (GDI) for some of these economies. The higher shares for an economy such as Hong Kong, as compared to a less-developed economy such as the Philippines, reflect not only the underdevelopment of the local capital-goods industry. They also reflect Hong Kong's strategy of heavy reliance on the capital-goods imports as a way of acquiring the modern machinery and equipment necessary to compete on world markets. Moreover, it is notable that the share of capital-goods imports rose in Korea in the 1980s even though the country was well on its way toward developing a strong domestic capital-goods industry. The share of imported capital goods in GDI in these East Asian economies is also considerably above that in the Latin American NIEs, where it has tended to fluctuate only between 8 and 15 percent.

As noted, foreign study, visits to foreign factories and product fairs, congresses, copying, imitation, and reverse engineering have also been very important sources of technology acquisition, but it is difficult to obtain any hard data regarding the extent to which they have influenced technological development in the East Asian economies. Impressionistic evidence does suggest, however, that such economies as Taiwan, Korea, and Hong Kong have made much greater use of these more indirect means of technology transfer than have the Latin American NIEs. This may be due in part to the more extensive contact they have had with the outside world as a result of their much greater outward economic orientation.

Various studies have also suggested that indirect inflows, such as the technological specifications provided by large merchandise buyers and other foreign contractors to local subcontractors, have

been very important sources of technology transfer.[8] Again, these appear to have been much more important in Taiwan, South Korea, and Hong Kong than in either the Latin American NIEs or the other East Asian economies. In Taiwan and Korea this phenomenon is very closely related to a pattern that developed when the United States started to wind down its aid program. During this time, large U.S. mass merchandisers such as Sears, J. C. Penny, and K-Mart began to source some of their products locally. The reputation Taiwan and Korea developed for being low-cost and reliable suppliers led to a virtuous circle that attracted more contracts from more merchandisers, eventually including more upscale retailers such as Macy's and Bloomingdale's. In making their orders, these companies typically provided the designs they wanted fabricated as well as considerable technical assistance in their actual production.

The Role of Direct Foreign Investment in the Development and Trade of the East Asian Economies

The role of direct foreign investment (DFI) in the development and trade of East Asian economies is a vast subject in itself, especially since its role has been changing over time. For the purposes of this analysis, some cross-country comparisons at more or less the same point in time will reveal various development strategies as well as the relative importance of DFI (see Table 2.12). The widest divergence in the relative importance of DFI actually exists within the NIEs. DFI as a percentage of GNP is smallest in Korea and Taiwan, at around 2 percent, and largest in Singapore, at 65 percent. The latter figure is the highest by far among the major exporting economies. Even Malaysia at 30 percent and Hong Kong at 15 percent are much lower. The percentages for Indonesia, the Philippines, and Thailand fall between those middle figures and the very low figures for Taiwan and Korea.

In Korea and Taiwan, DFI was limited until recently when, as in the case of technology transfer legislation, the economies were liberalized in order to attract the foreign investment that would bring the kind of technology they needed.[9] However, it is likely that DFI was much more important in these economies some years ago. As these two economies have grown, the relative importance of DFI has fallen.

In Singapore, on the other hand, DFI has been and continues to be crucial for the economy's survival. After its separation from Malaysia in the mid-1960s, the city-state of Singapore, with its relatively large and underemployed labor force, could not have grown and increased its standard of living if it had not attracted DFI. It succeeded in this endeavor by providing a stable political

environment and a cheap labor force at an important crossroads in Asia. As the strategy of attracting DFI paid off and led to rising wages that began to erode its initial comparative advantage, Singapore had to modify its strategy. To continue to attract DFI, it focused on providing an excellent physical infrastructure. It now has one of the world's biggest and most efficient shipping ports, one of the most advanced telecommunications systems, and an airport. Singapore has also focused on upgrading the quality of its labor force in order to provide an appropriate skill base for the more technology-intensive industry it wants to attract.

Table 2.12 also reveals that, in all of these economies, DFI has been much more important in terms of its share of manufactured exports than in terms of its share of manufacturing output. Thus, foreign investment has been quite significant in developing foreign trade links. The importance of foreign firms in manufactured exports can also be seen from another perspective—that is, on the basis of data on the percentage of U.S. imports from these economies that are made by affiliates of U.S. companies (see Table 2.13). These percentages range from a low of less than 10 percent for Korea and Taiwan, where there is a more developed local industrial class, to highs of 70 and 90 percent for Singapore and Malaysia, where there is a much less developed local industrial class and industry is concentrated in the hands of foreigners.

The Technical Human Capital Base

Another reason the East Asian NIEs have been able to perform so well has been their relatively high educational levels. A high level of education, especially technical education, facilitates technology transfer and assimilation. With respect to secondary education, the NIEs were much above the average for middle-income economies even as early as 1965, and over time they have maintained a wide margin (see Table 2.14). At higher levels of education, the NIEs (with the exception of Singapore) were not much above the average for middle income economies. However, in Korea and Taiwan investment in higher education has been rapidly built up; indeed, by 1985 enrollment ratios were considerably higher than the average for middle-income economies, even though they had not yet reached the level of the industrialized economies. Accompanying these increases was a greater emphasis on engineering and technical education. This emphasis was particularly marked in Singapore, which, in spite of its relatively low enrollment ratio, turned out many more engineers and other technical people per capita than some economies with higher enrollment ratios.

Among the other four East Asian economies, large increases have occurred in enrollment ratios at the secondary and, especially, the higher education levels.[10] Except for the low ratio for Indonesia, the latter rival even those for the NIEs.

Local Technological Efforts in the East Asian Economies

There is a large disparity between the NIEs and the emerging NIEs regarding the degree of local research and development (R&D) efforts they are undertaking. This disparity is reflected in the last column of Table 2.14, which shows that the NIEs tend to have four or more times the number of scientists and engineers engaged in R&D per capita than the emerging NIEs. It is also revealed in terms of R&D spending as a percentage of GNP (see Table 2.15). In addition, there has been a clear pattern of increasing expenditures on R&D in the NIEs since 1980. This pattern is related to the NIEs' need to improve their technological level in the face of increasing competition from lower wage cost competitors, an issue that will be taken up in the next section.

Key Issues in Trade and Technology for the Future

Against the background of the impressive performance of the East Asian NIEs and the emerging NIEs, we can examine some of the key issues facing these economies. Trade has played a major role in the success of these economies. Between 1965 and 1986 in the world at large, trade has become more important as a share of all economic activity. For the eight East Asian economies, however, trade was relatively more important in 1986 than for other groups of countries; in addition, the percentage point increase in their share of trade was larger (see Table 2.16). This fact is most marked for the four NIEs of this group: In these NIEs the share of trade and the percentage point increase tends to be more than two times higher than for the other four economies.

The East Asian NIEs have benefited in many ways from their ability to trade with the rest of the world. First, although they are relatively poor in natural resources, they have been able to overcome that handicap through trade. Second, through trade they have acquired much of the capital goods, material inputs, and disembodied technology necessary for successful industrialization. Third, trade has permitted the NIEs to expand beyond their relatively small domestic markets.

The expansion of these markets made possible by world trade is important for a number of reasons. From a technical perspective, a

large market is critical for industries (such as steel and cement) that have large economies of scale. Korea has been particularly adept at exploiting this advantage in many basic industries. In steel, for example, the plant of the state-owned Pohang Steel Corporation is larger than any single plant in the United States; it is also one of the lowest-cost producers in the world. In addition, Korea has the largest cement plant in the world. Its steel and cement industries have relied very heavily on the export market to get the economies of scale necessary for efficient production. More generally, however, access to a large market permits greater specialization than would be possible in small local markets. That specialization and the accumulation of experience of learning by producing large volumes of goods have been very important even for the more traditional industries such as footwear, clothing, and the wide variety of miscellaneous manufactured goods the East Asian economies have been so successful in exporting. Such specialization and access to large markets is also important for the new wave of high-technology industries that have high R&D costs: The larger the volumes, the lower the unit cost of fixed R&D spent on developing each new product. In addition, as noted above, participation in world markets has the added advantage of providing access to technology in the form of specifications and technical assistance from buyers as well as from suppliers of machinery and specialized raw materials.

Even though the East Asian NIEs have grown very rapidly over the last two decades, they are still relatively small and will need to continue to rely very heavily on trade. However, they are facing three key challenges on the trade front. One concerns the means of succeeding in an increasingly competitive global environment. Another concerns the threat of increasing protectionism in their export markets. And the third concerns the threat of increasing technonationalism.

The Need for Dynamic Adjustment to Evolving Comparative Advantage

The very impressive rise of the East Asian NIEs in trade is evidence of the tremendous competition and dynamism in the world market. The NIEs have made large inroads in the market share of industrialized economies in many of the more traditional products such as footwear, clothing, cork and wood products, furniture, and a host of other goods. Much (though certainly not all) of this progress had been based on their low-cost labor. However, their success with respect to these products is being challenged on two fronts. First, that very success has led to rapidly rising real wages, which are eroding

some of their competitive advantage in these labor-intensive products. Less-developed, lower-wage economies such as Indonesia, Thailand, India, and China are now entering world markets successfully in many of these traditional products and, in turn, are challenging the competitiveness of the East Asian NIEs. Second, there is a technological dynamism stemming from the diffusion of microelectronics technology, which is spreading automation to these previously labor-intensive products.[11] Though still not completely dominant, these trends open up the possibility for industrial economies to regain comparative advantage in the previously declining labor-intensive sectors. In addition, there has been a general shift to more design-intensive modes of production with greater product differentiation that militate against comparative advantage based solely on low production costs.

In short, the NIEs have been caught in a squeeze between their lower-wage developing-country competitors and the need to match the increasing technological sophistication of the industrialized economies. They must now move into more complex and higher value-added traditional products as well as into new high-technology products, which the lesser-developed economies will have more difficulty producing. However, as they try to move up the ladder of comparative advantage toward more complex manufactures, they will run into more difficulties with the industrialized economies. In this connection they have four not necessarily mutually exclusive options.

One is to specialize in products that require large production runs to reach efficient scales in order to counteract the labor-cost disadvantage the NIEs face with respect to their lower-wage competitors. This Korea has managed to do successfully in such industries as steel, cement, bicycles, and other traditional products for which scale economies are important.

Another is to focus on higher value-added specialty niche products that require very quick responses to new fashions and market trends. This is largely what Hong Kong and Taiwan have been doing in the areas of clothing and footwear. Taiwan, too, has applied this concept to traditional products such as bicycles by focusing on the higher-quality recreational bicycle market as opposed to the lower-quality mass market targeted through large production runs (as Korea is doing).

A third option for the NIEs is to increase automation in order to combat rising labor costs. This is being done on a large scale in Korea, Singapore, and Taiwan. Hong Kong has an important escape valve in being able to relocate the labor-intensive part of

its production to mainland China. The other three economies are doing the same on a smaller scale as foreign investors in lower-cost Asian economies such as Thailand, Indonesia, and the Philippines.

A fourth option is to produce newer, more technology- and design-intensive products. This option is riskier and requires more effort, but it could have higher returns given that intense competition is squeezing profit margins out of the more traditional manufactures where there are many entrants. There are different ways to exercise this option: Singapore does so by providing excellent physical infrastructure and an increasingly skilled labor force to attract foreign firms involved in higher-value production. Korea has done the same in its automobile industry and in some higher-technology products through a combination of joint ventures, technology licensing agreements, and its own R&D efforts, as has Taiwan in its electronics industry, through joint ventures and its own R&D effort. A very impressive Taiwanese example is the Acer computer company, which has developed its own brand name and is aiming to become the fifth largest computer company in the world based largely on its own R&D effort.

The competitive strategy that works best depends not only on the technological capabilities of different economies but also on their industrial structure and supporting infrastructure. Singapore, for example, has not had much of a choice because of its small size and initially very limited technological base. Korea has been able to develop its own brand names in automobiles and electronic equipment due in large part to the willingness and financial capability of its large chaebuls to assume the risks involved and to go head to head with large multinational competitors. As Taiwan has been more limited in such risky undertakings by the more fragmented and smaller firms in its industrial structure, it has tended to focus more on exploiting the specialty niches. (Acer is an exception.)

For the emerging NIEs the competitive options are much the same, although there are two differences that temper their choices. On the one hand, as low-wage economies they are not as competitively disadvantaged as the NIEs in terms of labor costs. On the other hand, labor is increasingly becoming a smaller proportion of total costs, so the lower wages themselves are not as important a determinant of competitiveness. The second difference is that the emerging NIEs do not have the technological and entrepreneurial base to implement some of the options as successfully as the NIEs.

The Threat of Protectionism in the OECD Markets: Implications for the Asian NIEs and Near NIEs

One of the threats facing the East Asian economies is increasing protectionism in developed country markets, particularly in manufactured products. The 1960s and the early 1970s, when most of these economies made their biggest export drives, were unique periods of expanding world trade. With slower world growth, fiscal imbalances, and pressures to adjust to new technologies and major currency realignments, the outlook for an expansion of world trade is much less favorable. Moreover, protectionist pressures, especially with regard to manufacturers, are rising.

The East Asian NIEs are particularly vulnerable to these protectionist threats. As was seen in Table 2.9, their exports are mostly manufactured products. In addition, their major markets have increasingly been the industrialized economies, except in the Philippines and Hong Kong (see Table 2.17). The trend has been reversed in these two economies, but they nevertheless remain very dependent on industrialized country markets.

To the extent that protectionist pressure is sparked by recent rapid changes in market shares, a very rough idea of some products in which the East Asian economies are likely to face increasing protectionist pressure can be obtained by identifying those products in which the exporting economy had attained a world market share of at least 3 percent by 1985 (the latest year for which data were available for most economies) and had grown by at least 10 percent per year over the previous five years (see Table 2.18). By this criterion, Taiwan and Korea are likely to face the greatest protectionist pressures worldwide and in the United States, because they have the most manufacturing products showing rapidly growing market shares. Hong Kong is likely to face less protectionist pressure because it has not significantly expanded its market shares. Singapore, too, is not likely to face much protection, except perhaps in the U.S market for its agricultural products. In this connection it should be recalled that the bulk of Singapore's manufactured exports to the United States are made by affiliates of U.S. companies. Thailand and the Philippines are likely to face even less protectionist pressure both because of their much lower penetration of world markets and because of the agricultural nature of their recent expansion of market share. However, retaliatory measures have recently been initiated even against those nations whose market shares are still very small.

At a more general level one might expect that the economies running large trade surpluses are going to face increasing pressure to

reduce exports and increase imports. By this criterion, the East Asian economies likely to face the most pressure are Taiwan and South Korea because they have the largest trade surpluses with OECD economies (see Table 2.19).[12] This pressure is most likely to come from the United States, which has a trade deficit with every one of these eight economies. In 1986, this deficit totaled $37.7 billion dollars—a figure larger than the rest of the combined OECD deficit with these economies ($29.5 billion).[13] The pressure is likely to be much greater on Taiwan than on Korea. Korea has a large foreign debt that it must service. Taiwan has virtually no foreign debt; indeed, it has over $70 billion reserves. One form this pressure may take is graduation of most of the Asian NIEs from the generalized system of preferences (GSP), which is the U.S. trade program that gives preference to developing country imports.

The East Asian NIEs have been responding to the protectionist threat in three ways. First, they have opened up their economies to more imports in order to take the steam off the charge that they are neomercantilistic. This effort has been made primarily by Taiwan and Korea, inasmuch as Hong Kong and Singapore are basically free-trade economies. Both countries, but particularly Taiwan, have been making strides toward the liberalization of imports, especially imports from the United States.

Second, all four East Asian NIEs have been seeking greater diversity in their export markets. Of course, such diversification is not as easy as it may seem. As noted above, many of these economies' exports are by subsidiaries to their home parents or other affiliates, or as part of subcontracting agreements for large merchandisers, particularly in the United States.

Third, the NIEs have responded to protection by investing abroad for production of exports aimed at key markets. They have most commonly achieved this by setting up shop in third countries that are not fully utilizing quotas already allocated under existing export restrictions, or in third countries whose volumes of imports are not yet high enough to trigger adverse reaction by the target market. Examples include textile and garment investment aimed at the United States from Morocco, Bangladesh, the Philippines, Thailand, Indonesia, and various countries in Latin America and in the Caribbean basin. A newer strategy has been to set up assembly or full production in the target countries themselves. So far, this kind of investment has taken place almost exclusively in the North American market. Examples are Korea's Hyundai automobile plant in Canada and Taiwan's Acer computer assembly in the United States. The next wave of investment is likely to occur in the European Common

Market, given the increasing concern that the more unified market meant to be realized by 1992 may also result in higher external trade restrictions.

The responses to protection by the emerging Asian NIEs are different. As noted above, they are less likely to be the target of protectionist pressure because of their smaller penetration of markets in industrial economies. Thus, an important element of their strategy is to attract more outward-oriented foreign investment. This is increasingly taking the form of investment by the Japanese. With the appreciation of the yen and the rising Japanese concern about bilateral trade frictions with the United States and Europe, the Japanese have become, in the last three years, the world's most active foreign investors. Although the bulk of their investments has been in the United States, they have also considerably increased their investments in these "second-tier" Asian economies, particularly Thailand.

Threats of Increasing Technonationalism: Implications for the Asian NIEs and the Emerging NIEs

In their initial stages of development, Korea and Taiwan were able to obtain much of their technology in capital goods—that is, as part of their subcontracting for foreign buyers or through licensing and technical assistance contracts.[14] As they have matured and become more formidable international competitors, however, these economies and the other NIEs have had difficulty obtaining access to the more sophisticated technology that they now need to compete in world markets.

There is some evidence that in the 1950s, the 1960s, and even the 1970s, technology suppliers were more willing than they are now to transfer their technology at a relatively low price. Because markets were less internationalized, the sale of technology tended to be seen more as an additional source of income than as a potential competitive threat. As markets have internationalized and poor nations have matured into very strong competitors, however, there is increasing awareness of the competitive threat implicit in technology licensing. Some studies such as Mansfield et al. (1979), for example, show that, other things being equal, there is a preference among multinational firms to supply technology to foreign markets—first, by exporting the products there; second, by setting up local subsidiaries; third, by participating in local joint ventures; and, only last, by licensing technology to third parties. And even then, the technology that is licensed tends to be older and less valuable.

As a result, as noted above, countries like Korea and Taiwan have

had to liberalize royalty limits and other restrictions on foreign technology purchases, as well as on direct foreign investment, in order to obtain the technology they need. They have also found it necessary to increase their own R&D efforts. As is evident from Table 2.15, Korea has made the greatest efforts in this direction. In fact, that country is already spending more than 2 percent of its GNP on R&D and expects to be spending 3 percent by 1990.

Greater local R&D has at least three advantages for the East Asian NIEs. First, it helps to increase their bargaining power in negotiating technology transfer agreements. One example of the success of this strategy involves the transfer of VCR technology to Korea. Japanese technology suppliers were unwilling to license some elements of VCR technology until a Korean R&D institute initiated research on that technology. Faced with the prospect of losing all royalties if the local efforts were successful, Japan and Korea reached a technology transfer agreement.

Second, increased R&D efforts help in the assimilation of foreign technology, whether through formal transfers or informal transfers. There is evidence that, in some cases, local joint-venture partners have had to demonstrate high absorptive capacity in order to be selected as joint-venture partners.

Third, the development of a country's own technology is becoming increasingly important as a way to break into those areas in which it is very hard to obtain technology from abroad. It is also becoming a prerequisite to participation in the new forms of strategic alliances that are emerging around technology sharing in some high-technology areas.[15] So far, these strategic alliances have tended to occur among firms in industrialized economies where both partners are able to bring technology to the table. Those involving developing economies have been limited to alliances whereby the firms from industrialized economies provide R&D and design and those from developing economies carry out sophisticated manufacturing at low cost. These kinds of alliances have tended to be most frequent between firms from the United States and firms from the NIEs; they have also permitted the former to remain competitive in areas such as automobiles and electronics, from which they were losing market shares to Japanese firms. In addition, they have provided the NIE firms an opportunity to acquire greater experience in manufacturing more sophisticated products.[16] How much developing countries can get from such alliances, however, depends on their capability to absorb the technology. Moreover, the greatest rents tend to go to the foreign partners providing the technology and the design. Therefore, some of the

most advanced firms in the NIEs are increasing their investments in R&D so as to expand their absorptive capabilities and to participate as more equal partners in such exchanges.

Another strategy being followed by Korea and Taiwan has been to invest in high-technology firms and research facilities in industrialized economies, particularly in the United States. So far these have been concentrated primarily in electronics-related firms in "Silicon Valley." However, more investments and acquisitions are likely to occur in biotechnology and new materials firms—not only in the United States but also in Europe.

For the emerging East Asian NIEs, the problem of access to foreign technology is not as severe as that for the NIEs. Their competitive threat is not perceived as being as serious as that of Korea and Taiwan because they are still producing at a much lower technological level, and, as in the case of Singapore, a much larger share of their total manufactured exports is being produced by affiliates of foreign firms. One of the critical issues for these countries is the question of how to attract the kind of foreign investment that has the greatest spillover and other externality effects to contribute to their economic development. They must also concentrate on developing their own technological capabilities and skill bases in order to attract more of that type of investment and make the most use of the technology and other externalities that they can get from foreign investment.

Concluding Comments

The world economy is undergoing tremendous structural adjustment as a result of both the widely varying rates of development of different economies and rapid technological change. Nations can react in two ways. They can try to resist the change and keep the old order. Or they can be prepared to cope with and even take advantage of change. Strong pressures are being exerted in favor of the first approach, particularly by the interest groups most adversely affected by change. However, most changes are the natural consequence of the development process, and they are either very difficult or very costly to avoid. Hence, there is a premium on the ability to react to and take advantage of the changes taking place. In other words, there is a need to develop firm, national, and even international strategies to deal with change.

At the industry level, firms must determine how their activities fit into evolving trends in the world economy. They may need to improve or change products and processes in order to cope with

new, evolving situations. They may also need to rethink their make-or-buy decisions, not only at the local level but also at the international level, as there are many possibilities for new design, production, and distribution arrangements that may involve new relationships and strategic alliances with firms in other economies.

At the national level, countries must minimize the costs of adjustment and take advantage of new opportunities. The options available will differ from country to country depending on the stage of development and the national characteristics in question. The specific elements of adjustment to be emphasized are greater general measures that increase flexibility in labor and capital markets, and special measures such as firm adjustment assistance and worker retraining.

Finally, at the international level, agreements, conventions, and institutions must be prepared to cope with change—a breakdown of the international system would obviously be to the detriment of us all. And given that many developing countries are being adversely affected or bypassed by change, and given that they may not, by themselves, be able to cope with or take advantage of that change, we must explore the ways in which we can help.

Table 2.1 GNP Per Capita, GNP Growth Rates, and Population Figures for Selected Economies

Economy	GNP/Capita (1986 Dollars)	Average Annual Growth Rate	Population (Millions as of mid-1986)
Low-income economies[a]	270	3.1	2493.0
Middle-income economies[b]	1270	2.6	1268.4
Indonesia	490	4.6	166.4
Philippines	560	1.9	57.3
Thailand	810	4.0	52.6
Malaysia	1830	4.3	16.1
Korea	2370	6.7	41.5
Taiwan	3976	6.9	19.5
Hong Kong	6910	6.2	5.4
Singapore	7410	7.6	2.6
Industrial-market economies[c]	12960	2.3	741.6

Sources: World Bank, *World Development Report 1988*; except for Taiwan figures, which are taken from ROC, Council for Economic Planning and Development, *Taiwan Statistical Data Book 1987*.

[a]The low-income economies are those with less than $450 per capita. There are 39 such economies, including India ($290 per capita) and China ($300 per capita).
[b]The middle-income economies, in order of increasing GNP per capita, are Liberia, Yemen (PDR), Indonesia, Yemen (Arab Republic), Papua New Guinea, Côte d'Ivoire, Honduras, Egypt, Nicaragua, Thailand, El Salvador, Botswana, Jamaica, Cameroon, Guatemala, Congo, Paraguay, Peru, Turkey, Tunisia, Ecuador, Mauritius, Colombia, Chile, Costa Rica, Jordan, Syria, Lebanon, Brazil, Malaysia, South Africa, Mexico, Uruguay, Hungary, Poland, Portugal, Yugoslavia, Panama, Argentina, Republic of Korea, Algeria, Venezuela, Gabon, Greece, Oman, Trinidad and Tobago, Israel, Hong Kong, Singapore, Iran, Iraq, and Romania. It does not include the following high-income oil exporters: Saudi Arabia, Kuwait, United Arab Emirates, and Libya.
[c]The industrial-market economies, in order of increasing GNP per capita, are Spain, Ireland, New Zealand, Italy, United Kingdom, Belgium, Austria, Netherlands, France, Australia, Germany (Federal Republic), Finland, Denmark, Japan, Sweden, Canada, Norway, the United States, and Switzerland.

Table 2.2 GDP and World Shares for Selected Economies, 1965 vs. 1986

Economy	GDP (Billions of Dollars) 1965	GDP (Billions of Dollars) 1986	Percentage Shares of Total 1965	Percentage Shares of Total 1986	1986 Share/ 1965 Share
Low-income economies	146.3	621.3	8.45	4.80	0 57
Middle-income economies	202.6	1740.0	11.72	13.42	1.14
Indonesia	3.8	75.2	0.22	0.58	2.64
Philippines	6.0	30.5	0.34	0.23	0.68
Thailand	4.0	41.8	0.23	0.32	1.39
Malaysia	3.1	27.6	0.18	0.21	1.17
Korea	3.0	98.1	0.17	0.76	4.45
Taiwan	2.8	75.5	0.16	0.58	3.63
Hong Kong	2 1	32 2	0.12	0.25	2.07
Singapore	1.0	17.3	0 06	0.13	2.22
High-income oil exporters	6 8	153.3	0.39	1.18	3.03
Industrial-market economies	1373.4	10451.9	79.43	80.61	1.01
Total[a]	1729.1	12966.5	100.00	100.00	—

Sources: Calculated from World Bank, *World Development Report 1988*, pp. 226–227, except for Taiwan figures, which are taken from ROC, Council for Economic Planning and Development, *Taiwan Statistical Data Book 1987*.

[a]Excludes the USSR, Albania, Angola, Bulgaria, Cuba, Czechoslovakia, the German Democratic Republic, the Korean Democratic Republic, and Mongolia.

Table 2.3 Manufacturing Value Added of Selected Economies and Their World Shares in 1970 and 1986

Economy	Manufacturing Value Added (Billions of Dollars)		Percentage Shares of Totals		1986 Share/ 1965 Share
	1970	1986	1970	1986	
Low-income economies	40.9	145.7	5.81	5.76	0.99
Middle-income economies	64.3	358.3	9.13	14.16	1.55
Indonesia	1.0	11.4	0.14	0.45	3.22
Philippines	1.6	8.0	0.23	0.32	1.37
Thailand	1.0	7.7	0.14	0.30	2.17
Malaysia	0.5	n.a.	0.07	n.a.	—
Korea	1.9	24.5	0.27	0.97	3.59
Taiwan	1.0	24 0	0.14	0.95	6.79
Hong Kong	1.0	6.7	0.14	0.26	1.89
Singapore	0.4	4.3	0.06	0.17	2.83
High-income oil exporters	0.6	13.2	0.09	0.52	5.78
Industrial-market economies	598.3	2012.6	84.97	79.56	0.94
Total[a]	704.1	2529.8	100.00	100.00	—

Sources: Calculated from World Bank, *World Development Report 1988*, pp. 236–237, except for Taiwan figures, which are taken from ROC, Council for Economic Planning and Development, *Taiwan Statistical Data Book 1987.*

[a]Excludes the USSR, Albania, Angola, Bulgaria, Cuba, Czechoslovakia, the German Democratic Republic, the Korean Democratic Republic, and Mongolia.

Table 2.4 Structure of Production, 1965 and 1986

Economy	Percentage Distribution of GDP						Absolute Value of Change[a]
	Agriculture		Industry		Services		
	1965	1986	1965	1986	1965	1986	
Low-income economies	42	32	28	35	30	32	19
Middle-income economies	22	15	33	36	45	48	13
Indonesia	56	26	13	32	31	42	60
Philippines	26	26	28	32	46	42	8
Thailand	35	17	23	30	42	53	36
Malaysia	28	—	25	—	47	—	—
Korea	38	12	25	42	37	45	51
Taiwan	27	7	29	47	44	46	40
Hong Kong	2	0	40	29	58	71	26
Singapore	3	1	24	38	73	62	27
Industrial-market economies	5	3	40	35	54	61	14

Sources: Compiled from World Bank, *World Development Report 1988*, pp. 226–227, except for Taiwan figures, which are taken from ROC, Council for Economic Planning and Development, *Taiwan Statistical Data Book 1987*.

[a]This is the sum of the absolute value of the difference of the shares of agriculture, industry, and services between the two periods.

Table 2.5 Structure of Manufacturing, 1970 and 1985: Percentage Distribution of Manufacturing Value Added

Economy	Food and Agriculture		Textiles and Clothing		Machinery and Transport Equipment		Chemicals		Others	
	1970	1985	1970	1985	1970	1985	1970	1985	1970	1985
Indonesia	—	23	—	11	—	10	—	10	—	47
Philippines	39	34	8	10	8	11	13	11	32	34
Thailand	43	30	13	17	9	13	6	6	29	34
Malaysia	26	21	3	6	8	23	9	10	54	40
Korea	26	16	17	17	11	23	11	9	35	36
Taiwan	—	14	—	15	—	17	—	10	—	44
Hong Kong	4	5	41	39	16	21	2	2	36	33
Singapore	12	6	5	4	28	49	4	8	51	33

Source: World Bank, *World Development Report 1988*, pp. 236–237, except for Taiwan figures, which are taken from ROC, Council for Economic Planning and Development, *Taiwan Statistical Data Book 1987*.

Table 2.6 Merchandise Trade of Selected Economies and Their Shares of World Trade and World GDP in 1986

Economy	Exports		GDP
	Billions of Dollars Total	Percent Share of World Total	Shares of World Total
Low-income economies	61.2	3.20	4.80
Middle-income economies	364.4	19.05	13.42
Indonesia	14.8	0.77	0.58
Philippines	4.8	0.25	0.23
Thailand	8.8	0.46	0.32
Malaysia	13.9	0.73	0.21
Korea	34.7	1.81	0.76
Taiwan	39.8	2.08	0.58
Hong Kong	35.4	1.85	0.25
Singapore	22 5	1.18	0.13
Industrial-market economies	1443.6	75.47	80.61
Total[a]	1912.9	100.00	100.00

Sources: Calculated from World Bank, *World Development Report 1988*, pp. 242–243 and 226–227, except for Taiwan figures, which are taken from ROC, Council for Economic Planning and Development, *Taiwan Statistical Data Book 1987*.

[a]Excludes the USSR, Albania, Angola, Bulgaria, Cuba, Czechoslovakia, the German Democratic Republic, the Korean Democratic Republic, and Mongolia.

Table 2.7 World Export Shares at the One-Digit Level for Selected East Asian Economies, 1985[a]

SITC Commodity	Korea	Taiwan	Hong Kong	Singapore
0 Food and live animals	0.85	1.28	0.13	0.74
1 Beverages and tobacco	0.66	0.07	0.89	0.68
2 Crude materials, excluding fuels	0.30	0.58	0.19	1.21
3 Mineral fuels, etc.	0.29	0.15	0.02	1.90
4 Animal and vegetable oil and fat	0.04	0.03	0.01	7.15
5 Chemicals	0.74	0.60	0.12	0.94
6 Basic manufactured goods	2.92	2.72	0.68	0.68
7 Machinery and transport equipment	2.32	1.77	.075	1.56
8 Miscellaneous manufactured goods	5.00	6.85	6.01	0.96
9 Goods not classified by kind	0.07	0.42	0.83	6.46

SITC Commodity	Philippines	Thailand
0 Food and live animals	0.61	2.35
1 Beverages and tobacco	0.19	0.38
2 Crude materials, excluding fuels	0.47	0.73
3 Mineral fuels, etc.	0.01	0.03
4 Animal and vegetable oil and fat	3.80	0.23
5 Chemicals	0.12	0.07
6 Basic manufactured goods	0.19	0.51
7 Machinery and transport equipment	0.06	0.13
8 Miscellaneous manufactured goods	0.31	0.56
9 Goods not classified by kind	5.44	0.22

Source: Computations based on United Nations Trade Data.

[a]Export data were not available for Indonesia and Malaysia.

Table 2.8 World Export Shares: Top Five Commodities at the Two-Digit Level for Selected East Asian Economies, 1985[a]

Korea (12/10)		Taiwan (12/11)	
Top Five	**Shares**	**Top Five**	**Shares**
83 Travel goods, handbags	13.21	83 Travel goods, handbags	22.99
85 Footwear	11.58	85 Footwear	16.91
84 Clothing	9.83	63 Wood, cork manufactures	9.03
94 Zoo animals, pets	6.83	84 Clothing	7.73
65 Textile yarn, fabric	5.76	82 Furniture	6.74
Hong Kong (7/5)		**Singapore (6/1)**	
Top Five	**Shares**	**Top Five**	**Shares**
91 Mail (unclassified)	14.01	23 Rubber, crude, synthetics	11.40
84 Clothing	12.65	43 Processed animal, vegetable oil	10.62
83 Travel goods, handbags	5.75	93 Special transactions	7.49
89 Miscellaneous manufactured goods	4.47	42 Fixed vegetable oil and fat	7.48
81 Plumbing, heating, lighting equipment	4.09	91 Mail (unclassified)	4.43
Philippines (3/0)		**Thailand (5/0)**	
Top Five	**Shares**	**Top Five**	**Shares**
93 Special transactions	6.43	23 Rubber, crude synthetics	8.37
42 Fixed vegetable oil, fat	5.11	04 Cereals and preparations	5.29
06 Sugar preparations, honey	3.69	06 Sugar preparations, honey	5.07
63 Wood, cork manufactures	1.47	03 Fish preparations	3.77
05 Fruits and vegetables	1.31	05 Fruits and vegetables	3.21

Source: Computations based on United Nations Trade Data.

[a]The first number in parentheses under the name of the economy indicates how many of its commodity exports at the two-digit level have a 3 percent or greater world market share. The second number indicates how many of them are in manufacturing (where manufacturing includes SITC numbers between 50 and 89 except for 68).

Table 2.9 Structure of Merchandise Exports, 1965 vs. 1985

	Fuels, Minerals, Metals		Other Primary Commodities		Machine & Transport Equipment		Other Manufactures		Absolute Value of Change
	1965	1986	1965	1986	1965	1986	1965	1986	1986 vs 1965
Low-income economies	17	15	57	29	1	11	28	44	56
Middle-income economies	31	28	48	20	3	14	15	35	62
Indonesia	43	58	53	21	3	3	1	19	65
Philippines	11	14	84	26	0	6	6	55	116
Thailand	11	4	84	54	0	9	4	33	75
Malaysia	35	26	59	38	2	26	4	10	60
Korea	15	3	25	6	3	33	56	58	63
Hong Kong	2	2	11	6	6	21	81	71	30
Taiwan	2	2	57	7	4	29	37	62	100
Singapore	21	21	44	12	11	38	24	30	75
High-income oil exporters	98	88	1	1	1	3	1	8	19
Industrial-market economies	9	8	22	12	32	42	37	37	21

Source World Bank, *World Development Report 1988*, pp. 244–245.

Table 2.10 Sectors with Highest RCA in 1965 vs. 1985 and those with the Fastest-Growing RCA in 1980–1985

	1965	1985	Number of Sectors Among Top Ten That Changed[a]	Fastest Growth in RCA Between 1965 and 1985
Korea				
Manufacturing	5	7	4	2
Nonmanufacturing	5	3	1	0
Taiwan				
Manufacturing	5	9	5	6
Nonmanufacturing	5	2	1	1
Hong Kong				
Manufacturing	9	7	1	0
Nonmanufacturing	1	3	2	2
Singapore				
Manufacturing	3	5	2	0
Nonmanufacturing	7	5	2	5
Philippines				
Manufacturing	1	1	0	2
Nonmanufacturing	9	9	4	6
Thailand				
Manufacturing	0	3	3	5
Nonmanufacturing	10	7	2	5

Source: Appendix Tables 4A.1–4A.6.

[a]Based on the manufacturing and nonmanufacturing nature of the new commodities that made the top-ten list in 1985.

Table 2.11 Capital-Goods Imports as a Percentage of Gross Domestic Investment for Selected Economies

Year	1962–1966	1967–1971	1972–1976	1977–1981	1982–1986
Philippines	17.7	22.0	20.5	17.0	15.6
Korea	16.9	27.5	27.7	24.7	31.0
Hong Kong	20.6	42.7	39.3	35.0	54.0

Source: United Nations Trade Data for imports; World Bank data base for GDI.

Table 2.12 The Relative Importance of Direct Foreign Investment in the East Asian Economies

	Direct K Stock of Foreign Affiliates as % of GNP		Employment of Foreign Affiliates as % of Total Employment		Output of Foreign Affiliates as % of Manufacturing Output		Exports of Foreign Affiliates as % of Manufactured Exports	
Economy	Year	%	Year	%	Year	%	Year	%
Indonesia	1982	10.9	1977	0.8	1974	27.0	n.a.	
Philippines	1983	7.7	1976	1.6	1974	78.0	n.a.	
Thailand	1984	4.9	1976	0.3	1971	18.2	1971	22.7
Malaysia	1984	29.6	1975	5.9	1975	39.8	n.a.	
Korea	1983	1.9	1978	2.3	1978	19.3	1978	24.6
Hong Kong	1981	15.2	1984	9.8[a]	1981	13.9	1984	16.5
Taiwan	1981	2.0	1981	4.8	n.a.		1981	25.6
Singapore	1983	65.3	1982	54.6[a]	1982	62.9	1982	72.1

Source: John Dunning and John Cantwell (eds.), *IRM Directory of Statistics of International Investment and Production* (Basingstoke, England: Macmillan, 1987).

[a]As a percentage of employment in manufacturing.

Table 2.13 U.S. Imports Shipped by Majority-Owned U.S. Affiliates from Selected Economies in 1981 Compared to Total U.S. Manufacturing Imports (Millions of Dollars)

	Imports from Affiliates		U.S. Imports of Manufactures	
	Total	Manufacturing	Total	Imports from Affiliates (%)
Indonesia	2097	70[a]	146	48
Philippines	303	281	1140	25
Thailand	51	n.a.	492	—
Malaysia	1142	1036	1157	90
Korea	277	277	4893	6
Hong Kong	925	584	5171	11
Taiwan	731	717	7779	9
Singapore	1334	1223	1793	68

Sources: Imports for affiliates: U.S. Department of Commerce, Bureau of Economic Analysis, *U.S. Direct Investment Abroad: 1982 Benchmark Survey Data*, Washington, D.C.: U.S. Government Printing Office, p. 283; imports of manufactures: U.S. Department of Commerce, *U.S. General Imports: World Areas by Commodity Groupings* (FT155/Annual 1981), Washington, D.C.

[a]Nonpetroleum.

Table 2.14 Educational Enrollment Ratios and Scientists and Engineers Per Million Population

Economies	Number Enrolled in Secondary Education as % of Age Group 1965	1985	Number Enrolled in Higher Education as % of Age Group 1965	1985	Scientists and Engineers in R&D Per Million Population
Low-income economies	22	34	2	—	
Middle-income economies	22	49	5	14	
Indonesia	12	39	1	7	116 (1982)
Philippines	41	65	19	38	117 (1980)
Thailand	14	30	2	20	150 (1975)
Malaysia	34	52	2	16	182 (1983)
Korea	35	94	6	32	801 (1983)
Hong Kong	29	69	5	13	
Taiwan	—	—	8	21	643 (1983)
Singapore	45	71	10	12	949 (1984)
Industrial-market economies	63	93	21	39	
Japan	82	96	13	30	4189 (1983)
United States	—	99	40	57	3111 (1983)

Source: Enrollment ratios: World Bank, *World Development Report 1988*, pp. 280–281, except for Taiwan figures, which are taken from ROC, Council for Economic Planning and Development, *Taiwan Statistical Data Book 1987*; scientists and engineers in R&D per million population: Hamid Alavi, "Human Resources and Technology Data Base" (World Bank, 1988), unprocessed mimeo.

Table 2.15 R&D Spending as a Percentage of GNP

Year	1975	1980	1981	1982	1983	1984	1985
Indonesia						0.40	
Thailand							0.30
Philippines				0 20			
Malaysia							0.50
Korea	0.42	0 58	0.65	0.90	1.05	1.26	1.59
Hong Kong		0 72	0.94	0.91	0.94	0.99	1.06
Singapore		0.20	0.30			0.50	
Japan	2.40	2.63	2.87	3.01	3.15	3.29	3.49
United States	2 45	2.57	2.64	2.83	2.88	2.89	3.06

Source: Hamid Alavi, "Human Resources and Technology Data Base" (World Bank, 1988), unprocessed mimeo.

Table 2.16 Exports as a Percentage of GDP for Selected Economies, 1965 and 1986

Economy	Exports of Goods and Nonfactor Services		Increase in Share of Trade in GDP (Percentage Points Change)
	1965	1986	
Low-income economies	7	10	3
Middle-income economies	17	22	5
Indonesia	5	21	17
Philippines	17	25	8
Thailand	18	27	9
Malaysia	42	57	15
Korea	9	41	32
Taiwan	19	60	41
Hong Kong	71	112	41
Singapore	123	—	—
Industrial-market economies	12	17	5

Source: Compiled from World Bank, *World Development Report 1988*, except for Taiwan figures, which are taken from ROC, Council for Economic Planning and Development, *Taiwan Statistical Data Book 1987*.

Table 2.17 The Origin and Destination of Manufactured Exports

	% Destination of Manufactured Exports							
	Industrial-Market Economies		Developing Economies		High-Income Oil Exporters		Other[a]	
Economy	1965	1986	1965	1986	1965	1986	1965	1986
Low-income economies	56	45	33	48	2	4	9	3
Middle-income economies	45	60	33	31	1	3	22	7
Indonesia	25	50	73	46	0	4	2	0
Philippines	93	74	7	25	0	1	0	0
Thailand	39	60	61	32	0	8	0	0
Malaysia	17	69	81	29	2	2	0	0
Korea	68	75	32	20	0	5	0	0
Taiwan	—	70	—	12	—	3	—	15[b]
Hong Kong	71	60	28	38	1	2	0	0
Singapore	9	55	88	40	3	4	0	1
Industrial-market Economies	67	74	30	22	1	2	2	2

Source: World Bank, *World Development Report 1988*, pp. 248–249, except for Taiwan figures, which are taken from ROC, Council for Economic Planning and Development, *Taiwan Statistical Data Book.*

[a]Includes the USSR, Albania, Angola, Bulgaria, Cuba, Czechoslovakia, the German Democratic Republic, the Korean Democratic Republic, and Mongolia.
[b]May be overstated because destination data were not disaggregated enough to allocate among the other categories.

Table 2.18 Products with the Greatest Change in World and U.S. Market Shares, 1980–1985, by Exporting Economy

World Market			U.S. Market		
SITC Code	Product	Rate of Growth of Market Share	SITC Code	Product	Rate of Growth of Market Share
		Korea			
73	Transport equipment	38.3	57	Explosives, pyrotechnics	124.7
69	Metal manufactures	20.5	81	Plumbing, heating equipment	21.0
72	Electrical machinery	11.7			
		Taiwan			
81	Plumbing, heating equipment	36.9	52	Coal, petroleum chemicals	449.3
82	Furniture	21.2	81	Plumbing, heating equipment	20.1
66	Nonmetal minerals manufactures	19.1	61	Leather, dressed fur	14.5
69	Metal manufactures	18.5	71	Nonelectrical machinery	11.8
61	Leather, dressed fur	13.9			
66	Textile yarn, fabric	10.2			
		Hong Kong			
35	Electric energy	26.3	[No products met criteria]		
		Singapore			
[No products met criteria]			43	Processed animal and vegetable oil	290.0
			42	Fixed vegetable oil, fat	54.4
			07	Coffee, tea, spices	22.4
		Thailand			
06	Sugar and preparations, honey	33.2	08	Animal feed stuff	33.3
03	Fish and preparations	12.3	03	Fish and preparations	26.5
			04	Cereals and preparations	22.0
		Philippines			
[No products met criteria]			43	Processed animal and vegetable oil	466.0

Source: Computations based on United Nations Trade Data.

Note: Product must have had a market share of at least 3 percent in 1985 and an average annual rate of growth in market share of 10 percent or more between 1980 and 1985. Analysis was not possible for Indonesia and Malaysia due to lack of data for 1985.

Table 2.19 Merchandise Imports and Exports from Selected Economies by OECD, United States, and Japan, 1986 (Billions of Current Dollars)

	Imports By			Exports From		
	OECD	United States	Japan	OECD	United States	Japan
Indonesia	13.0	3.7	7.3	6.2	.9	2.7
Philippines	4.7	2 2	1.2	3.3	1.3	1.1
Thailand	5.9	1.9	1.4	4.8	.8	2.0
Malaysia	9.3	2 5	3.8	5.3	1.7	1.7
Korea	25.8.	13 5	5.3	21.4	5.8	10.5
Taiwan	33.5	21 2	4.7	16.8	5.1	7.8
Hong Kong	18.3	9 5	1.1	15.8	2.9	7.2
Singapore	9.4	4.9	1.4	11.8	3.2	4 5

Sources: Imports: OECD, *Foreign Trade by Commodities, Volume II.Imports* (1987), pp. 94–96; exports: OECD, *Foreign Trade by Commodities, Volume I:Exports* (1987), pp. 94–96.

Table 2A.1 Changes in Revealed Comparative Advantage at SITC Two-Digit Level of Disaggregation: Korea

SITC Code	Description	RCA
	Top Ten in 1965	
63	Wood, cork manufactures	18.96
03	Fish and preparations	12.28
29	Crude animal, vegetable matter	7.12
84	Clothing	7.67
85	Footwear	5.67
28	Metaliferous ores, scrap	4.15
94	Zoo animals, pets	3.92
65	Textile yarn, fabric, etc.	3.24
27	Crude fertilizers, minerals	2.90
89	Miscellaneous manufactured goods	2.13
	Top Ten in 1985	
83	Travel goods, handbags	7.83
85	Footwear	5.72
84	Clothing	5.63
94	Zoo animals, pets	5.26
03	Fish preparations	3.09
65	Textile yarn, fabric, etc.	2.75
69	Metal manufactures	2.27
96	Nongold coin (noncurrent)	2.22
62	Rubber manufactures	2.07
73	Transport equipment	1.50
	Fastest-Growing RCA in 1980–1985[a]	
73	Transport equipment	16.68
69	Metal manufactures	1.76

Source: Computations based on United Nations Trade Data.

[a]With an RCA greater than one in 1985.

Table 2A.2 Changes in Revealed Comparative Advantage at SITC Two-Digit Level of Disaggregation: Hong Kong

SITC Code	Description	RCA
	Top Ten in 1965	
84	Clothing	22.67
83	Travel goods, handbags	9.63
81	Plumbing, heating, lighting equipment	9.54
89	Miscellaneous manufactured goods	8.61
85	Footwear	7.26
65	Textile yarn, fabric, etc.	3.56
82	Furniture	2.94
12	Tobacco and manufactures	1.52
69	Metal manufactures	1.51
72	Electrical machinery	1.22
	Top Ten in 1985	
84	Clothing	13.67
91	Mail not classified by kind	6.45
83	Travel goods, handbags	6.23
89	Miscellaneous manufactured goods	4.14
86	Instruments, watches, clocks	3.45
81	Plumbing, heating, lighting equipment	3.33
65	Textile yarn, fabric, etc.	1.98
35	Electric energy	1.91
72	Electrical machinery	1.70
12	Tobacco and manufactures	1.52
	Fastest-Growing RCA in 1980–1985[a]	
SITC Code	Description	Annual Percentage Growth
12	Tobacco and manufactures	31.07
35	Electric energy	8.00

Source: Computations based on United Nations Trade Data.

[a]With an RCA greater than one in 1985.

Table 2A.3 Changes in Revealed Comparative Advantage at SITC Two-Digit Level of Disaggregation: Taiwan

Top Ten in 1965

SITC Code	Description	RCA
63	Wood, cork manufactures	11.75
06	Sugar preparations, honey	11.46
05	Fruits and vegetables	9.74
55	Perfume and cleaning products, etc.	3.61
84	Clothing	2.86
04	Cereals and preparations	2.42
65	Textile yarn, fabric, etc.	2.21
24	Wood, lumber, cork	1.84
29	Crude animal, vegetable matter	1.62
89	Miscellaneous manufactured goods	1.31

Top Ten in 1985

SITC Code	Description	RCA
83	Travel goods, handbags	13.48
85	Footwear	8.26
63	Wood, cork manufactures	4.93
84	Clothing	4.38
89	Miscellaneous manufactured goods	3.15
82	Furniture	3.37
03	Fish and preparations	3.09
81	Plumbing, heating, lighting equipment	2.81
65	Textile yarn, fabric, etc.	2.68
69	Metal manufactures	2.24

Fastest-Growing RCA in 1980–1985[a]

SITC Code	Description	Annual Percentage Growth
52	Coal, petroleum, chemicals, etc.	37.02
81	Plumbing, heating, lighting equipment	17.45
82	Furniture	6.10
66	Nonmetallic minerals	5.66
61	Leather, dressed fur	2.69
69	Metal manufactures	2.02
29	Crude animal, vegetable matter	1.53

Source: Computations based on United Nations Trade Data.

[a]With an RCA greater than one in 1985.

Table 2A.4 Changes in Revealed Comparative Advantage at SITC Two-Digit Level of Disaggregation: Singapore

SITC Code	Description	RCA
	Top Ten in 1965	
23	Rubber, crude, synthetic materials	17.33
91	Mail not classified by kind	8.26
94	Zoo animals, pets	5.17
42	Fixed vegetable oil, fat	3.08
93	Special transactions	2.89
33	Petroleum products	2.34
52	Coal, petroleum, chemicals, etc.	2.00
08	Animal feeding stuff	1.69
07	Coffee, tea, cocoa, spices	1.53
55	Perfume and cleaning products, etc.	1.60
	Top Ten in 1985	
23	Rubber, crude, synthetic materials	10.07
43	Processed animal, vegetable oil, etc.	9.67
93	Special transactions	4.99
42	Fixed vegetable oil, fat	4.98
33	Petroleum and products	3.71
07	Coffee, tea, cocoa, spices	2.23
63	Wood, cork manufactures	2.12
72	Electrical machinery	2.06
52	Coal, petroleum, chemicals, etc.	1.51
29	Crude animal, vegetable matter	1.42
	Fastest-Growing RCA in 1980–1985[a]	
SITC Code	Description	Annual Percentage Growth
33	Petroleum and products	24.67
07	Coffee, tea, cocoa, spices	11.80
93	Special transactions	4.23
43	Processed animal, vegetable oil, etc.	2.72
42	Fixed vegetable oil, fat	.93

Source: Computations based on United Nations Trade Data.

[a]With an RCA greater than one in 1985.

Table 2A.5 Changes in Revealed Comparative Advantage at SITC Two-Digit Level of Disaggregation: Thailand

SITC Code	Description	RCA
	Top Ten in 1965	
23	Rubber, crude, synthetic materials	12.11
04	Cereals and preparations	10.56
94	Zoo animals, pets	3.73
28	Metalliferous ores, scrap	3.02
26	Textile fibers	2.93
05	Fruits and vegetables	2.37
29	Crude animal, vegetable matter	2.24
00	Live animals	1.54
24	Wood, lumber, and cork	1.51
08	Animal feeding stuff	1.33
	Top Ten in 1985	
23	Rubber, crude, synthetic materials	23.89
06	Sugar preparations, honey	12.72
03	Fish and preparations	10.28
05	Fruits and vegetables	8.56
04	Cereals and preparations	7.85
29	Crude animal, vegetable matter	4.05
84	Clothing	3.11
94	Zoo animals, pets	2.47
63	Wood, cork manufactures	2.16
66	Nonmetal mineral	2.12
	Fastest-Growing RCA in 1980–1985[a]	
06	Sugar preparations, honey	35.12
61	Leather, dressed fur, etc.	27.97
85	Footwear	25.74
09	Miscellaneous food preparations	17.14
66	Nonmetallic minerals	9.90
03	Fish and preparations	8.75
84	Clothing	7.98
29	Crude animal, vegetable matter	7.23
23	Rubber, crude, synthetic materials	4.35
63	Wood, cork manufactures	1.23

Source: Computations based on United Nations Trade Data.

[a]With an RCA greater than one in 1985.

Table 2A.6 Changes in Revealed Comparative Advantage at SITC Two-Digit Level of Disaggregation: Philippines

SITC Code	Description	RCA
	Top Ten in 1965	
22	Oil seeds, nuts, kernels	23.56
06	Sugar preparations, honey	16.34
42	Fixed vegetable oil, fat	14.14
24	Wood, lumber, cork	13.92
63	Wood, cork manufactures	7.55
28	Metalliferous ores, scrap	4.05
08	Animal feeding stuff	2.63
12	Tobacco	2.36
05	Fruits and vegetables	1.76
26	Textile fibers	1.04
	Top Ten in 1985	
93	Special transactions	21.29
42	Fixed vegetable oil, fat	16.79
06	Sugar preparations, honey	14.23
63	Wood, cork manufactures	5.36
05	Fruits and vegetables	5.39
43	Processed animal and vegetable oil, etc.	5.23
28	Metalliferous ores, scrap	4.87
24	Wood, lumber, cork	4.50
03	Fish and preparations	3.82
96	Nongold coin (noncurrent)	3.01
	Fastest-Growing RCA in 1980–1985[a]	
56	Fertilizers, manufactured	147.56
96	Nongold coin (noncurrent)	144.82
43	Processed animal, vegetable oil, etc.	54.85
68	Nonferrous metals	23.84
93	Special transactions	18.88
29	Crude animal, vegetable matter	12.15
94	Zoo animals, pets	7.21
82	Furniture	1.19

Source: Computations based on United Nations Trade Data.

[a]With an RCA greater than one in 1985.

Notes

1. Botswana is the only economy that had higher per capita GNP growth during the period in question (8.8 percent).

2. The relatively high growth rate for the low-income economies was due exclusively to the performance of China, where the per capita GNP growth rate was 5.1 percent.

3. The share of the labor force in agriculture in Thailand is 71 percent, compared to 57 percent in Indonesia and 52 percent in the Philippines.

4. The absolute changes in shares over the same period were 9 percent for the United States, 12 percent for Japan, and 13 percent for West Germany.

5. For the Latin American NIEs as well as for the industrialized market economies as a group, the opposite is true. Their shares of world GNP are greater than their shares of world exports, even for Japan (though not for Germany, which is a very export-oriented economy).

6. At finer levels of disaggregation, their shares in world trade would increase even further in some sectors.

7. RCA is measured by the ratio (Xij/ Xwj)/(Xit/Xwt), where i = country, j = category of export, w = world exports of relevant category, and t = all exports. It is algebraically equivalent to (Xij/Xit)/(Xwj/Xwt), which is another common form of expressing RCA. A ratio greater than 1 therefore means that a country has a revealed comparative advantage in the export of the commodity in question, since it is relatively more preponderant in its trade than in the trade of the world as a whole.

8. See, for example, Westphal, Rhee, and Purcell (1981).

9. Foreign investment in Taiwan has probably played a more important role than in Korea, where it has been limited primarily to chemicals and synthetic fibers, electrical and nonelectrical machinery, and textiles and apparel.

10. The Philippines is somewhat of an anomaly in that it has much higher enrollment ratios than may have been expected given its level of development and performance.

11. For some evidence on diffusion and microelectronics, see Mody and Wheeler (1989).

12. Indonesia is the exception, inasmuch as its surplus is primarily due to oil exports.

13. Other OECD members actually had surpluses with these economies. Japan, for example, had a surplus of $11.3 billion with them—mostly with the NIEs in the group. To put the U.S. deficit with these eight East Asian economies in perspective, the reader should note that the U.S. trade deficit with Japan alone was $86.3 billion in 1986.

14. For a more detailed overview of how Korea acquired technological capability, see Wesphal, Kim, and Dahlman (1985).

15. For a current analysis of this phenomenon, see Mody (1989).

16. For some interesting examples of such experience see Gomes-Casseres (1988).

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chapter three

China in the World Economy: Implications for U.S. Policy

Nicholas R. Lardy

Economic reforms have propelled China's economy forward at an unprecedented pace in the last decade. The rate of growth has accelerated to a level half again as great as China experienced during the Maoist years. According to an estimate by the U.S. Commission on Integrated Long-term Strategy, China will surpass both the Soviet Union and Japan to become the world's second largest economy by 2010.[1] If the respective growth rates of China and the major industrialized countries over the past decade were sustained for four decades, according to *The Economist*, by 2030 China would become the world's largest economy.[2]

China's growth acceleration has been both accompanied and facilitated by its dramatic opening to the outside world. Its trade volume has quintupled since reform began, and China's role in the international economy has indeed been transformed. In the Maoist era, as a result of the stress on self-reliance and autarky, China was not a significant participant in the international trading and financial system. But by the mid-1980s China was on the verge of becoming one of the top ten trading countries in the world, was attracting more foreign direct investment than any other developing country, had become the largest borrower from the World Bank, and was active in selling its financial obligations in markets from Tokyo to London. In short, in many respects—its rate of domestic economic growth, its level of foreign trade, and its success in attracting direct foreign investment—China's performance has not only surpassed that of the second-tier emerging industrialized economies but even challenges such countries as South Korea, Taiwan, Mexico, and Brazil.

China's dramatically increased participation in the world

economy presents both opportunities and challenges for the industrialized Western economies, particularly the United States. On the one hand, China is emerging as a major market for commodities, with annual imports running at a level of well over $40 billion (roughly the level of South Korea and surpassing that of Taiwan), and an apparently attractive environment for foreign direct investment.

At the same time China poses special challenges for U.S. trade policy for at least four reasons. First, as already mentioned, there is the suddenness with which China has burst into the world trading system. In less than a decade China's trade has leapt to a level that Taiwan and South Korea took three decades to achieve. Second, there is the huge size of the Chinese economy as measured by the magnitude either of its output or of its labor force. While it remains poor in per capita terms, its billion-plus population means that China is among the largest producers in the world of a dozen or more important internationally traded commodities. Thus, it has the potential to exert substantial influence in many product markets. Third, although its economic reforms are arguably by far the most successful of any socialist state, China retains many elements of a state-directed trading system. That legacy complicates both China's accession to membership in the world's major international trade organization—the General Agreement on Tariffs and Trade (GATT)—and the United States' treatment of Chinese goods sold in our market. Under existing legislation the legacy requires that the United States treat China as a nonmarket economy, which subjects the import of China's goods into our market to potential action under Section 406 of the Trade Act of 1974. Fourth, there is the legacy of the 1950s; when U.S. and Chinese forces fought on the Korean peninsula. The U.S. embargo on all trade with China, imposed in 1950, was not eased until 1972. In 1983 President Reagan declared China to be a "friendly non-allied nation." However, the transfer of U.S. technology to China, when it might have some potential military application, continues to be restricted by U.S. export-control regulations and by COCOM, the Paris-based sixteen-nation Coordination Committee for Multilateral Export Control. China is the only developing country for which COCOM export controls apply.

These trends raise several issues, addressed further below. Will China be able to sustain its early successes and fully achieve the status of a newly industrialized economy? Put another way, will China be able to avoid the pitfalls that aborted the attempt of several of the Eastern European economies to enter the world economy beginning in the late 1970s, leaving them with declining levels of hard-currency

exports, a widening technological gap compared with their competitors among the newly industrialized economies, and levels of external debt far beyond their capacity to finance? If China surmounts the difficulties faced by earlier reforming socialist economies, will the effects of China's expanding trade continue to be concentrated in the Pacific region or will they be felt more broadly by the world economy? Can the developed market economies, as a group, readily absorb the large increase in labor-intensive manufactured goods that such an achievement would require? Will the role of direct foreign investment continue to expand as rapidly as in the recent past, and can China continue to reform its domestic institutions so as to be capable of increasing the benefits from the technology transfer such investment entails?

China's Gross National Product

China's long-term rate of growth is among the most rapid in the developing world. Even prior to the acceleration of economic growth that has occurred under the reform program directed by Deng Xiaoping, China's GNP expanded by an average annual rate of 6.0 percent.[3] During the first decade of reform the pace of expansion has accelerated further, averaging 8.8 percent—almost half again as fast as during the pre-reform period.[4]

There is widespread consensus concerning the growth rates discussed above but considerable uncertainty regarding the dollar value of China's GNP. The World Bank uses the official Chinese exchange rate to convert China's official data on GNP in domestic currency to a dollar standard. The Bank figure for 1985 per capita GNP was $310, roughly the level of Haiti.[5] Of course, there are problems stemming from the use of the official exchange rate. The rate is administered and almost certainly substantially understates the purchasing power of the domestic currency, but it is not clear whether the degree of understatement has risen or fallen over time.

The use of the official exchange rate to estimate the dollar-level GNP thus does create major problems. China's trade ratio for 1985, for example, was 28.8 percent when calculated using the official exchange rate—an implausibly high level.[6] Another example demonstrates the same problem. The World Bank places China's GNP growth rate at 9.8 percent during 1980–1985. Yet the Bank's estimate of 1985 per capita GNP, $310, is only slightly above their $290 estimate for 1980.[7] This implausibly small increase in the dollar value of GNP can be explained by the fact that the 1985 GNP estimate is based on the domestic currency GNP converted to

dollars at an exchange rate of 2.9 yuan to the dollar, whereas the 1980 estimate is based on a conversion at the then-prevailing exchange rate of 1.5.[8] The problem is equally severe over the longer run. If China's 1985 estimated GNP is projected backward at the Bank's published rates of GNP growth, the result is an implausibly low 106 1982 dollars for China's 1960 per capita GNP.[9] At the other extreme, according to the most recent estimate of Allen Heston and Robert Summers, two principal researchers in the United Nations International Comparison Project (ICP), China's real per capita gross national product per capita in 1985 (measured in 1980 international prices) was $2,444.[10] The difference between the Bank's estimate and the ICP estimate is enormous, particularly for a country as large as China. By the ICP estimate, China's economy is already substantially larger than that of both the Soviet Union and Japan and thus, for some years, has ranked as the world's second largest economy.

In short, without substantially more research we cannot know whether China is the second largest or the ninth largest in the world or somewhere in between.[11] But there is little doubt that China's economy is growing rapidly and that if this growth is sustained China's potential role in the world economy will rise commensurately.

What, then, is the likelihood that China will sustain its growth in the years and decades ahead? Clearly, straight-line projections are not particularly useful, except perhaps as a device for illustrating how rapidly an economy has already grown. It is quite unlikely, for reasons beyond comparative historical experience, that China will continue to grow at an average rate approaching 10 percent per annum. Already, since 1984, there has been a distinct downturn in the performance of the farm sector. Output growth since 1984 has averaged under 3 percent, less than half the rate achieved in the first six years of rural reform (1978–1984). And a large share of the continued growth is the continued expansion of village-level industry. The value of all crop output (including grains, cotton and other fiber crops, edible vegetable oil seeds, sugar, vegetables, fruit, and so forth) has declined at an annual rate of .6 percent annually since 1984.[12]

The direct and indirect effects of poorer agricultural performance are substantial. The most obvious direct effect is that, since 1984, the farm sector is no longer a major contributor to GNP growth. That marks a sharp contrast with the first half of the decade. The indirect effects of slower farm growth are felt through the foreign trade sector and through rising price inflation.

In the first half of the 1980s China's imports of grains and fiber crops fell sharply, freeing up billions of dollars of foreign exchange earnings that were then used to purchase advanced Western equipment and technology. This equipment and technology increased the production capacity of China's manufacturing sector and, to a lesser extent, its consumer durables, thus providing a much-needed increment of high-quality goods to meet rising consumption demand. By the mid-1980s China was a net exporter of cereals for the first time since the 1950s. Due to its slowdown in agricultural growth, China is now back in the international market for imports of significant quantities of grains and larger quantities of sugar. Expenditures on these commodities now absorb several billion dollars per year.

A second indirect cost of lagging agricultural performance is the sharp upward surge in recent years in retail price inflation, due primarily to increasing prices of food products, particularly subsidiary foods such as pork, poultry and eggs, fresh vegetables, fish, fruit, and so forth. The rate of retail price inflation in 1984–1987, as recorded by official data, was fully three times the rate experienced in 1978–1984. In large measure this increase reflects much higher prices for nonstaple foods. In 1985–1987 prices of meat, poultry, and eggs shot up almost 60 percent; fresh vegetables more than 60 percent; fish almost 70 percent; and fruit also almost 70 percent. These increases appear to have accelerated in the first quarter of 1988, when nonstaple food prices rose by 24.2 percent in the medium and large cities, led by a 49.7 percent increase in vegetable prices.

Through the mid-1980s rapidly rising farm output made possible sharply higher real wages in the modern sector; these in turn generated substantial urban support for economic reforms. By 1987 this basis of support was in jeopardy. Even official data, which are widely believed to understate the real rate of inflation, show that more than a fifth of China's wage earners suffered a decline in their real living standard. That is in sharp contrast to the first half of the 1980s, when virtually all urban residents experienced rising real income.

Rising inflation has led China's leaders to adopt a more cautious approach toward price reform, thus further delaying much-needed change. And the prospect that a rising share of the urban population will suffer falling real incomes may further erode popular support for Deng Xiaoping's reform agenda.

Performance outside of agriculture is more difficult to predict—in part because of the varying assessments of productivity

performance in the state-owned industrial sector, which still produces roughly four-fifths of China's manufactured goods. World Bank estimates show total factor productivity declining since the onset of reform.[13] Newer estimates have been suggested by Thomas G. Rawski, Gary Jefferson, and their colleagues, who argue that the official data on capital investment are biased upward because of rising construction, and that machinery prices show a marked upturn in productivity growth in state industry since the late 1970s.[14] In my judgment, however, these newer estimates depend too heavily on somewhat arbitrary adjustments to the official capital stock figures. Much research will be needed to resolve these issues. In short, as we have no real fix on recent trends in total factor productivity in state manufacturing, there is little basis for projections of the single largest sector of the Chinese economy.

From a longer-term perspective there are other reasons for believing that China's growth rate will decline somewhat in the years ahead. Among the most significant are the major shortcomings in the development and utilization of human capital. This problem has several dimensions. At the base, primary school enrollment has fallen dramatically in the past decade. In part this drop in enrollment stems from the weakened financial resources of the rural collective units that traditionally have absorbed most of the costs of teachers' salaries and so forth. In part it stems from the decision of families to put children to work on their contracted land. The result has been the erosion of China's early achievements, unmatched among developing countries of the same income level, in the universalization of basic education. At the secondary level, the drop has been even more dramatic. China's enrollment ratio is now significantly below the developing country average.[15] There is substantial underinvestment in university education as well. Although the number of higher education institutions has expanded in recent years, total enrollment is still well under two million. The enrollment ratio for higher education as a whole is only about 3 percent, approximately half the average for other LDCs.[16]

Although educated and trained personnel are in short supply, they are poorly utilized. Despite years of criticism of the existing system, school leavers have little choice in their job assignments; moreover, the absence of the most rudimentary sort of labor market makes it difficult for individuals to change jobs once hired. A 1984 survey of scientific and engineering manpower disclosed an annual turnover rate of only about 3 percent, extremely low by international standards.[17] The result is an inevitable mismatch between skills and job requirements, and a limitation of the diffusion of new technology

through labor mobility. The same lack of mobility inhibits effective utilization of the many people who have been trained abroad in the last decade. Among those who have returned to China, there is the seemingly pervasive view that their new skills are not being effectively utilized and that their permanent attachment to specific work units effectively prevents their seeking other employment.

Despite these difficulties, the most recent projections of the World Bank are that China's gross domestic product will expand at an average rate from 5.4 to 6.6 percent annually, or from 4.3 to 5.5 percent in per capita terms, between 1981 and the year 2000.[18] While the models that underlie these projections employ a variety of assumptions regarding savings rates, the efficiency of investment in each sector, the growth of labor productivity, and so forth, all tend to result in unusually rapid projections of per capita income growth as compared with most other developing economies. According to the high growth projection, per capita GNP will rise from $300 in 1981 to $830 in 2000. According to the more cautious projection, per capita GNP in 2000 will be slightly lower—$670 per capita. In short, China's economy is likely to continue to grow at a relatively high rate but somewhat below the record-setting pace of the last decade.

China's Foreign Trade and Investment

What are the implications of these growth paths for China's foreign trade? The Bank's models project a slightly rising trend in China's foreign trade participation ratio between 1981 and 2000, thus implying that China's trade will grow somewhat more rapidly than its economy. According to the high growth projection, total trade turnover at the turn of the century would be $210 billion, compared with $44 billion in 1981. The more cautious projection sets trade turnover at $168 billion. That projection may be too low given that China's 1988 trade turnover, based on figures for the first half of the year, will likely approach $100 billion.

The key point is that, already in the first decade of economic reform, China has emerged as a major trading country, with total trade turnover rising from less than $15 billion in 1977 to almost $85 billion in 1987. Imports increased by $36 billion in this period, making China the most important new market in the developing world. China's imports by the mid-1980s exceeded in value not only those of all low-, middle-, and upper-middle-income developing countries but also those of all but a handful of industrial market economies.

While China was emerging between the late 1970s and the mid-1980s as a major new market, the demand for imports in many of the

most important U.S. markets among the LDCs stagnated or actually shrank. Mexico's imports, for example, increased by only a few billion dollars, and those of Brazil and Argentina shrank by several billion dollars. Traditional U.S. markets among LDCs are likely to continue to grow modestly in the next decade or more as these countries seek to generate export surpluses to pay the interest and perhaps some of the principal on their massive external debts. In short, China already has emerged as the most rapidly growing market in the developing world and even under the more cautious projection discussed above may become relatively more important in the decade of the 1990s.

What are the implications for the world economy of this rapid growth of Chinese trade? The reader should note at the outset that the dramatic expansion of Chinese trade over the past decade has been easily absorbed by the world economy. Between 1979 and 1985 PRC exports grew by $13.7 billion, an increase matched or exceeded by only a few upper-middle-income countries in the developing world. Yet there is little evidence that dramatically rising exports have caused significant market disruption. The United States, for example, has accommodated a very large increase in imports of Chinese textiles and apparel, China's largest single export category. The first quantitative restrictions on a small number of product categories were imposed in 1980. Although the scope of these restrictions expanded in subsequent renewals of the Bilateral Textile Agreement, by the mid-1980s China had become the fourth largest supplier of textiles and apparel to the U.S. market, following Hong Kong, Taiwan, and South Korea. As the newest bilateral agreement, which came into effect on January 1, 1988, covers almost the entire textile and apparel product range, it is likely to slow the growth of textile sales in the U.S. market to a rate well below that of recent years. Yet the U.S. market now absorbs several billion dollars annually in Chinese textile products, with only modest effects on the level of employment in the domestic industry.

Moreover, China's large-scale expansion of textile sales in the world market has not had substantial adverse effects on other producers. In the U.S. market, for example, the Chinese were never given quotas at the expense of traditional U.S. suppliers. The expansion of exports to the United States occurred despite the fact that China was initially handicapped by quotas that were based on historically low shares of the U.S. market. Chinese sales expanded to capture a significant share of the incremental growth of the textile apparel market in the United States without displacing traditional suppliers, whose sales to the United States have also increased. In this process the initial

rapid expansion of Chinese exports occurred in the area of products with relatively low value added, particularly grey goods and other textile fabrics. Traditional U.S. suppliers moved up-market to higher value-added products, a process that has continued since.

In other product areas U.S. producers have sought relief from Chinese imports in either antidumping actions or escape-clause and market-disruption actions. Although several of these cases have been highly publicized, they do not cumulatively suggest that the U.S. market has faced severe difficulties in absorbing Chinese goods. In many of the cases brought, the evidence did not support the complainant's charge that the Chinese products were being sold at less than fair market value, nor did it support the charge that the goods had caused injury to the domestic market. Even when the complaints were upheld and some relief was granted in the form of duties (as in the case of mushrooms and steel wire nails) or quotas (as in the case of clothespins), the value of the imports in question was quite small. I am not aware of evidence that Chinese goods have been the source of market disruption in other industrialized countries.

Thus China's trade expansion has not been disruptive. This is not surprising, given that China's share of world trade, even though it doubled in the past decade, is still relatively small. On the import side, China has become a very important market for countries in Asia, notably Hong Kong, Taiwan, South Korea, and Japan. Substantial expansion of trade ties with Taiwan and South Korea is particularly remarkable since there are no state-to-state ties and trade in both cases is indirect. Nonetheless, China now ranks as Taiwan's fourth or fifth largest trading partner and among South Korea's top ten trading partners.

Looking ahead, there is no reason to expect a significant change in the qualitative patterns of the past decade. Even if China's trade expanded to around $200 billion by the turn of the century, this amount would be readily absorbed in a world economy where exports are rising, as they did during the mid-1980s, at a rate of $60 to $70 billion annually. Even if world trade falters during part of the next decade, China's exports are not likely to be a disruptive factor because they almost certainly would grow less rapidly in a less robust world trade environment.

The Japanese and European Challenge

The Japanese and, to a somewhat lesser extent, the major European states have moved aggressively to capture a significant share of the

rapidly expanding market in China. Economic concerns have always been central to the Sino-Japanese relationship since formal relations were opened in the early 1970s. The Japanese have pursued a comprehensive, integrated strategy in their economic relationship with China that encompasses trade, concessional loans, official export credits, and various forms of commercial lending. Although Japanese firms were initially only modest sources of direct foreign investment in China, this situation has begun to change, with investment by Japanese firms in China in the first half of 1988 increasing at a pace faster than in any other industrialized country. That trend is likely to accelerate since Prime Minister Noboru Takeshita, in his August 1988 trip to China, signed a Sino-Japanese investment treaty that provides important protection for Japanese investments in China. Projects said to be under discussion include automobile manufacturing (Nissan and Mitsubishi) and steel; indeed, the Nissan Steel Corporation is negotiating to establish what would be the largest Sino-foreign joint venture.

Japan, through the Overseas Economic Cooperation Fund (OECF), has become the largest national supplier of aid to China. Since 1982 China has been the single largest recipient of Japan's development aid. As Table 3.1 shows, OECF has supplied three multiyear aid programs of ever-growing magnitude. The most recent, announced in the summer of 1988, is for $6.5 billion, roughly doubling the annual flow of Japanese development aid to China. These funds will support forty-two projects, including nine power plants, ten ground transport systems, two telephone systems, six fertilizer factories, and six other general infrastructure projects.

In addition, the Japanese Eximbank has previously provided $2 billion in loans for energy development projects, and the upcoming package of OECF aid, discussed above, will be supplemented with $320 million in Eximbank loans, mainly for the development of Hainan Island and the port of Qingdao in Shandong province. The rates and repayment terms on these loans are more favorable to China than those provided for in the Arrangement for Official Export Credits agreed among the OECD governments.

Although a part of Japanese aid and export credit is nominally untied, Japan's aid and credit programs are predominantly geared to commercial objectives. As officially accounted for by OECD, Japan's use of tied aid is proportionately less than that of the United States. However, the structure of Japanese aid heavily favors expenditures of the aid funds on Japanese firms. Most important is the requirement for detailed feasibility studies prior to funding projects. The Chinese and the recipient countries usually select Japanese firms to undertake

these detailed studies, which lead to project specifications that correspond with the goods and services provided by Japanese firms. Moreover, almost all of Japan's assistance to China is for capital-intensive projects in transportation, electric power generation, and so forth—projects that are critically dependent on sophisticated manufactured goods.

In the case of China, the projects further facilitate a long-term economic relationship with Japan because they support the development of Chinese exports to Japan. The most obvious examples are Japanese support for rail line and port improvements that will increase China's ability to export more coal and petroleum to Japan. In 1983, for example, a 7.6 billion yen loan was extended for the electrification of the Baoji (Shaanxi) to Zhengzhou (Henan) rail line, substantially increasing the carrying capacity of the rail system leading out of Shaanxi province, where almost half of China's coal is mined. Hence the projects financed with Japanese aid frequently have the objective of increasing China's ability to earn foreign exchange, thus also increasing their ability to purchase more goods abroad.

Canadian and European governments, too, have been active in using concessionary loans and credit packages to facilitate their commercial ties with China. The annual interest rate on these loans, which typically extend for twenty to thirty years, is usually 2 to 3 percent. An initial ten-year grace period, during which only interest payments are required, is also common. By November 1987 the cumulative value of concessionary loans committed to China by foreign governments exceeded $10 billion.

By contrast with the substantial Japanese and important European loans and credit programs for China, U.S. programs are extremely modest. Although the United States has aid programs for 102 nations, there is none for China despite the policy of three successive administrations offering verbal support for a strong and rapidly modernizing China. Although China is eligible for Eximbank financing, the amounts that have been supplied to date are modest in the extreme. Since 1980 it has supplied credits for the sale of a little over $300 million in U.S. exports. Two loans totaling $64 million were made in 1981–1985, and commitments for four projects totaling about $250 million were made for the fiscal years 1986 through 1988. Thus, total official U.S. financing for trade with China is a very small fraction of that produced by the Japanese government.

Over the period in which Japanese aid and trade credit have expanded, Sino-Japanese trade has grown dramatically. In 1976 total Sino-Japanese bilateral trade was only $3 billion, and China was

Japan's eighth largest trading partner, ranking behind the United States, Saudi Arabia, Australia, Canada, West Germany, the Soviet Union, and the United Arab Emirates. But China's importance to Japan rose steadily, ranking fifth by 1983 and fourth by 1984. By 1985 China ranked second among Japan's trading partners, behind only the United States, and it absorbed 7 percent of Japanese exports. Although trade (particularly Japanese exports) declined in 1986 and 1987, China remained Japan's second largest trading partner.

By contrast, the U.S. share of the Chinese market has remained relatively small and China is an extremely small market for U.S. goods, well under 2 percent of U.S. sales abroad. In 1987, after Japanese sales had fallen for two consecutive years, they were still twice the level of those of the United States.

Implications for U.S. Policy

The United States has a major economic stake in trade relations with the developing world. Developing countries traditionally have absorbed slightly more than one-third of all U.S. exports. Yet the United States is virtually alone among industrial states in utilizing the bulk of its foreign economic assistance for noneconomic purposes. Our major competitors use their aid predominantly for commercial market development. China is only one case, but an important one given its large size, whereas the Japanese have taken a long-term view of market potential and devoted significant resources to establishing what could become dominant market positions.

U.S. pressure on Japan in recent years to increase its contribution to the U.S. defense burden by increasing its nonmilitary aid programs appears not to have taken adequate account of the long-term consequences of the commercial character of Japan's development assistance program. Although expanded aid programs may contribute to the growth of a prosperous and politically stable developing world (as hoped by the United States), they will also serve the commercial interests of Japan—particularly in Asia, which for years has received 65–70 percent of all of Japan's bilateral economic assistance.

In the case of China, the stakes may be unusually high. China may emerge in the next decade as an important competitive arena for the United States and Japan. As Japanese and European firms take early strategic positions in many key sectors, particularly in telecommunications and power generation (including nuclear power plants), they may gain substantial advantages over later entrants into the market. Moreover, although the United States has established the

largest direct investment position in China, its position may erode quickly as a partial result of the developments discussed earlier. Japan, Taiwan, and South Korea are all poised to increase substantially their direct investments in China. All face pressures to reduce their dependence on the U.S. export market, and the rising values of their domestic currencies vis-à-vis the U.S. dollar reinforce these pressures. In the case of Japan, the bilateral investment treaty signed in August 1988 provides the green light for projects that have been under discussion for some time. The South Koreans have been anxious for several years to invest directly in China without having to establish the cumbersome U.S.–Hong Kong front organizations to act as the partner of Chinese firms in joint ventures. China's very recent acceptance of the visit by the Korean deputy economic planning minister and the acceptance of a long-standing South Korean proposal that the two sides open trade offices in each other's capitals suggest that a larger volume of investment and technology will soon be flowing openly across the Yellow Sea. Korean investment interests focus on automobiles, consumer electronics, and other consumer durables. The Nationalist government in Taiwan is under increasing pressure from Taiwan firms that fear they will lose market share in third countries because of the advantage Korean firms may gain by exploiting cheap labor in China. Firms in Taiwan are thus pressuring their government to permit direct investment on the mainland.

Given the large size of the Chinese domestic market, the establishment of significant manufacturing capability on the part of these firms in some sectors may have substantial ramifications in third-country markets. Japan's dominance of the production in domestic marketing in China of automobiles, semiconductors, some consumer electronics, and other key sectors may provide it with a substantial advantage in worldwide competition in markets for these products.

Conclusion

China has already emerged in the past decade as the largest and fastest-growing market in the developing world; indeed, its total imports reached $50 billion in 1988. Moreover, in 1985, 1986, and 1987, foreign firms invested more money in China than in any other developing country. These developments have simultaneously been made possible by and contributed to the success of China's reform program. In the past decade, China's growth rate has surpassed that of all other developing countries and stands on a par with the rates of the newly industrialized countries in East Asia. The prospects for a

continuation of this rapid growth and outward trade and investment orientation are difficult to judge. The pace of growth in the farm sector already has begun to decline, and there is little indication that the regime has adopted appropriate policies to reinvigorate that sector. In manufacturing, the reforms do not appear to have had much effect on reversing the long-term trend of declining total factor productivity in the predominant state-owned industrial sector. Rapid growth has occurred, but largely as a result of the accumulation of additional factories, machinery, and equipment. In the longer run this sector almost certainly will suffer from significant underinvestment in education from the elementary through the university levels, as well as from the failure to develop labor markets, particularly for scarce scientific, technical, and engineering manpower. Despite these shortcomings, the projections of the World Bank show Chinese GNP growth to the turn of the century at about 5 percent per capita in real terms, down from the pace of recent years but still well above the average for developing countries.

The growth of China's trade is even more difficult to predict. It grew faster than GNP in the 1950s, but it then stagnated in real terms between 1960 and 1972—even when GNP in real terms was advancing in more than 5 percent annually. Given the already high levels of trade, future growth is almost certainly crucially dependent upon the continued success of China's domestic economic reform program. Without reform of China's basic price structure, particularly one that reduces the very substantial relative underpricing of raw materials, there is little assurance that decentralized trading will contribute to a gain in China's national income, meaningfully measured. The Chinese are well aware that their relative price structure inappropriately encourages exports of raw materials, and they provide substantial subsidies to encourage the export of manufactured goods while simultaneously discouraging exports of raw materials through state-managed trading of these commodities or the use of export licenses. These methods of intervention of foreign trade are highly bureaucratic and provide little or no assurance of an economically rational pattern of trade. The continued reliance on state trading and export quotas would not facilitate a dynamic pattern of foreign trade.

China's foreign trade growth may be slowed by two other factors. The first factor is protectionism in its major markets, most notably, textile and apparel in the United States. The most recent bilateral agreement restricts the growth in the volume of such sales in the United States to under 3 percent annually. Even if the Chinese managed to move up-market to higher value-added products in most

categories, it appears unlikely that the growth of sales in value terms could match the 19 percent annual rate of expansion that prevailed prior to 1988. Second, in the course of a few years in the mid-1980s, China incurred long- and medium-term debt of more than $30 billion and had to finance a significant portion of its incremental imports. Unless China is prepared to compromise further its conservative borrowing strategy and to increase substantially its debt-to-export ratio, its future import growth will become even more dependent on export expansion, presumably leading to a somewhat lower pace of growth.

If China's reform program does not falter, its foreign trade could easily double between now and the turn of the century. Thus China's imports could reach $90–100 million, which would almost certainly represent a significant further expansion of the relative importance of the Chinese market. If firms from Japan, South Korea, and Taiwan step up substantially their offshore manufacturing in China to capitalize on relatively low labor costs and the weakening value of the Chinese currency vis-à-vis the dollar, it is possible that China's trade could expand even more rapidly. Even without this infusion of investment from East Asian countries, a substantial portion of China's trade growth is likely to continue to be with its East Asian trading partners. In short, China's new trade and investment policies are likely to continue to lead to increased economic integration in Northeast Asia and to contribute to the overall economic dynamism of the Pacific region.

The key questions these trends raise for the United States are the following. First, is it in our long-run interest to continue to press Japan to increase its economic aid as a part of burden sharing? Although an increase in Japanese assistance to the Philippines and perhaps other selected states could provide some short-term budgetary relief for the United States, in the long term the costs to the United States could easily outweigh the benefits. Japan's aid is allocated in a rather inflexible manner, and there is no assurance that the incremental aid will go disproportionately to regions of major concern to the United States. Roughly 70 percent of Japanese aid goes to Asia, and China will continue to be the largest single recipient. Thus only a very small share of increased Japanese aid will contribute effectively to burden sharing. Moreover, most of the aid is used for market development and is restricted to the purchase of goods from Japan. Although the Reagan administration sought to reduce both the amount of Japanese aid that is tied and the volume of subsidized export credits, the results of these negotiations are not promising. The prospect is that, as in the case of China, the bulk of

Japan's bilateral aid and export credits will be tied de facto if not de jure, and will be allocated to capital-intensive projects in sectors where the Japanese hope to establish long-term commercial positions.

Second, the United States should establish a trade finance program to compete with Japan and the European states in the Chinese market. The single greatest handicap facing the United States in the market is the lack of funding for major U.S.-sourced projects. The United States frequently has the technical capability to supply those large-scale projects in mining, electric power generation, telecommunications, and so forth, but it cannot compete with the financing terms offered by our competitors. Without a trade finance program, the United States runs the risk of supplying an ever-dwindling share of the largest and fastest-growing LDC market. In addition, the United States Trade and Development Program (TDP) should be substantially expanded. About one-quarter of its budget is currently allocated for Chinese projects, many of which have contributed significantly to U.S. sales. But the total budget of TDP is so small ($25 million) that it cannot provide funding for feasibility studies for larger projects. U.S. budgetary support for TDP is a very small fraction of that provided for Japan's comparable program and less than half that spent by the Canadian government. The relative underfunding of the U.S. program is more apparent when one considers that Canadian exports are only about 40 percent of the U.S. level.

Third, the United States should seek to facilitate China's entry into the GATT on terms that will ensure reciprocal market access. Although China's economic reforms have been initially successful, its trade regime is dominated by state-controlled trading companies, quantitative restrictions, import licensing, pervasive state price setting, and other characteristics inconsistent with the principles of the GATT. In short, as a typical protocol of accession that focuses on tariff concessions will not provide reciprocal market access, accession should be keyed to further reforms of domestic pricing, substantial diminution in the role of the state-controlled foreign trade corporations, a commitment to phase out quantitative restrictions on imports, and an increase in the transparency of the trading system. This will be a difficult agenda, however, because many GATT members—apparently now including Japan—are prepared to agree to China's accession without imposing such conditions.

Table 3.1 OECF Aid to China

Fiscal Years	Amount	
	Billion Yen	Billion Dollars
1979–1983	331	1.42 @ 233 ¥ = $1
1984–1989	470	3.8 @ 125 ¥ = $1
1990–1995	810	6.5 @ 125 ¥ = $1

Source: Compiled from *China-Daily Report*, August 24, 1988, p. 8; *China-Daily Report*, August 25, 1988, p. 15.

Notes

1. The Commission on Integrated Long-Term Strategy, *Discriminate Deterrence* (Washington, D.C.: Government Printing Office, 1988), p. 7.

2. "China Throws Open Its Seaboard," *The Economist* (March 12, 1988), p. 61.

3. Except where otherwise specified, this chapter makes use of official Chinese data. The compound rate of growth of 6.0 percent is for the period 1952–1978. See State Statistical Bureau, *Chinese Statistical Abstract 1987* (Beijing: Statistical Publishing House, 1987), p. 7 (in Chinese).

4. State Statistical Bureau, *Chinese Statistical Abstract 1987*, p. 7.

5. World Bank, *World Development Report 1987* (New York: Oxford University Press, 1987), p. 202.

6. According to the Chinese customs administration, the dollar value of China's foreign trade in 1985 was $69.6 billion. Since export and import accounts are reportedly maintained in dollars, these data are presumably in international prices. China's national income in 1985 was 700.7 billion yuan, the equivalent of $241.6 billion when converted at the official exchange rate of 2.9 yuan per dollar. Thus the trade ratio, imports plus exports divided by national income, was 28 percent in 1985. That rate seems implausibly high, presumably because the dollar value of national income is biased downward as a result of use of the official exchange rate.

7. World Bank, *World Development Report 1982* (New York: Oxford University Press, 1982), p. 110.

8. Data on the official exchange rate for 1980 and 1985 can be found in Nicholas R. Lardy, *China's Entry into the World Economy* (New York: Asia Society, 1987), p. 43.

9. The projected per capita GNP is low in two senses. First, at $106 in 1982 prices, China would have been among the very poorest of the developing countries. That seems unlikely because China's GNP growth in the 1950s was among the fastest in the world. Second, when a comparable backward projection is made for India, the result is a per capita 1960 GNP of $196 in 1982 prices. As Amartya Sen points out, it is extremely unlikely that China's per capita GNP was little more than half that of India's in 1960. Most authorities placed China's per capita income on a par with or slightly ahead of India's when systematic planning in the two countries began in the 1950s. However, Sen draws a conclusion contrary to that suggested here—that the Bank's growth rates for China are too high, not that the end-point dollar GNP is biased downward by the use of the official exchange rate. See Amartya Sen, *Commodities and Capabilities* (Amsterdam: North Holland, 1985), pp. 78–79.

10. Robert Summers and Alan Heston, "A New Set of International Comparisons of Real Product and Price Levels: Estimates for 130 Countries, 1950–1985," *Review of Income and Wealth*, Series 34, No. 1 (March 1988), p. 22.

11. According to *World Development Report 1987* (pp. 206–207), the GNP of seven IBRD members exceeds China. Since Soviet GNP exceeds that of China, China's rank is ninth.

12. Nicholas R. Lardy, "Chinese Agricultural Reform: Results and Outlook" (May 20, 1988). Paper prepared for the Department of State Conference on Reform in the USSR and China of June 6, 1988.

13. Gene Tidrick, *Productivity Growth and Technological Change in Chinese Industry*, World Bank Staff Working Paper No. 761 (Washington, D.C.: World Bank, 1986).

14. Kuan Chen, Gary H. Jefferson, Thomas G. Rawski, Hongchang Wang, and Yuxin Zhang, "Productivity Changes in Chinese Industry: 1953–1985," *Journal of Comparative Economics*, forthcoming.

15. *China: Issues and Prospects in Education* (Washington, D.C.: World Bank, 1985), p. 7.

16. *China: Issues and Prospects in Education*, p. 56.

17. State Science and Technology Commission of the People's Republic of China, *Guide to China's Science and Technology Policy* (Beijing: China Academic Publishers, 1987), p. 108.

18. World Bank, *China· Long-Term Development Issues and Options* (Baltimore: Johns Hopkins University Press, 1985), p. 36.

chapter four

The U.S.-Mexican Trade Relationship: Past, Present, and Future

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This chapter deals with the place of Mexico in the overall framework of U.S. trade policy, given the special relationship that exists between the two countries. It pursues the issue of bilateral exchange in the larger context of internal and external aspects of structural change—aspects that are leading to ever-greater degrees of de facto economic interdependence between the two countries, interdependence that includes trade, finance, technology, and migration. Because each area, such as trade, has a large and growing impact on the others, it is increasingly difficult to ignore the overall process of exchange when dealing with any single dimension. Hence in this chapter, we do address larger aspects of exchange, even though the primary objective is to look at matters of trade policy. We shall show that the trading patterns of both countries will remain highly complementary for the foreseeable future. Restructuring the U.S. economy depends on a recovery of its traditional export markets. This in turn calls for the revitalization of Latin American economies (and Mexico in particular), whereas Mexico's restructuring effort must count on continued access to the U.S. market. Trade access will have a favorable impact on the United States through reduced migration, improved debt service performance, and democratization with broader social participation south of the border. Trade in the absence of restructuring, however "free," is bound to be distorted and to produce both social and economic outcomes that are suboptimal from the viewpoint of both countries. But the restructuring of each country cannot take place without attention to bilateral trade relations.

Global Trade Patterns

Before considering recommendations for future trade policy between Mexico and the United States, we should briefly examine the evolution of world trade to determine whether there is evidence of a special place for the bilateral relationship. Information on the pattern of trade over the last several years is found in Appendix Table 4A.1. Several trends are revealed by the data: First, the rapid expansion in the volume of world trade is apparent over the whole period. However, growth in the value of trade slowed after 1979 due to a fall in primary product prices, as discussed below. As world GDP rose by 17 percent from 1980 to 1987, the volume of trade has increased by 23 percent while the unit value has fallen by more than 10 percent.

A second trend of note is that there are more products being traded in higher volumes than ever before. The top forty-six nonoil exports in global trade have fallen from 64 to 61 percent of total trade. In Mexico's case, since 1982 its nonoil exports have accelerated along with diversification, following the global pattern. The evolution of trade, from an emphasis on primary products to the supremacy of manufactures, represents the third trend. From 1980 to 1986, the volume of manufactured exports rose 30 percent, while the volume of primary commodity trade stagnated. Table 4.1 breaks down the forty-seven commodities into primary products, traditional manufactures, modern manufactures, and others for the years 1973, 1979, and 1985. Note the sharp declines for primary products and traditional manufactures, and the gains achieved by modern manufactures.

The recent trend in world commodity prices reveals two distinct subperiods, one from 1970 to 1980 and the other from 1980 to 1986 (see Appendix Table 4A.2). Led by oil, the price of primary products rose more rapidly than the price of manufactures between 1970 and 1980, increasing by 50 percent, while the unit value of manufacturing exports rose by 290 percent. Even if we discount petroleum, primary products prices still increased faster than manufactures, at 310 percent. Since 1980, however, the prices of manufactured exports have risen by 17 percent while primary commodities suffered a price decline of 32 percent (22 percent in the absence of petroleum) through the second quarter of 1987. Part of the explanation for this sharp reversal in the terms of trade of developing countries such as Mexico between the 1970s and 1980s has been the greater sensitivity of raw materials and primary products to swings in world demand. But another important factor is that the developing countries, because they have been forced to increase such exports in order to

service external obligations, have had to accept cuts in real prices because of inelastic world demand for basic commodities.

Mexico has been hit particularly hard by these international price fluctuations. In addition to the well-documented drop in petroleum prices and revenues, traditional exports of coffee, sugar, and cotton experienced above-average price declines, while some leading primary product imports such as beef, hides and skins, and wood pulp held most of their value.

The pattern of global trade serves as a backdrop to the evolution of U.S.-Mexican trade. Such trade must also be evaluated and projected in light of each country's overall trade pattern, industrial policy goals, and trade and macroeconomic policies.

Recent Trends in the United States Trade Pattern

The U.S. trade deficit has been a source of concern among economists, government officials, and members of the business community. In addition to discussing the sources of the huge deficits and the alterations they have forced on the pattern of U.S. trade, we will touch on the macroeconomic policies and forces that led to the deficit as well as the implications of the U.S. response for other countries.

Table 4A.3 shows the evolution of U.S. trade over the last ten years. The U.S. trading pattern in 1979 looked very reasonable and sustainable. The overall deficit, 10 percent to 15 percent of exports, was only slightly troublesome, and it could be ascribed primarily to the rise in oil prices. The agricultural sector was in surplus, with grain exports paying for imports of coffee, cocoa, sugar, fruits and vegetables, and fish and shellfish.

The United States imported some $60 billion of petroleum but was a net exporter of other nonagricultural industrial supplies and materials, particularly chemicals (+$10.0 billion) and minerals, wood, rubber, and so on (+$6.1 billion). Aside from oil, the major problem area was iron and steel (–$6.2 billion). But iron and steel were considered "isolated incidents," their noncompetitiveness explained by outdated technology and equipment. Foreign price and quality competition were expected to provoke modernization and cost cutting in the United States.

In the area of manufacturing trade, the export surplus from capital goods (+$33 billion) supported net imports of automotive vehicles (–$9 billion) and consumer goods (–$1.8 billion). Nonelectrical machinery (especially construction and textile machinery [+$8.3 billion] and business and office machines [+$4.4

billion]) and civilian aircraft and parts (+$9 billion) were the key contributors to the capital-goods surplus. Note, too, that the automotive vehicle and parts deficit was due solely to passenger cars (–$10 billion)—a condition viewed as temporary, reflecting the ponderously slow adjustment of auto makers to high domestic gasoline prices. The basic technological superiority of U.S. manufacturing was not questioned.

In contrast, by 1987 the trade picture had become bleak and untenable. No major subsection of the trade account remained in surplus, and the overall deficit of $150 billion had reached 60–70 percent of exports. Furthermore there is reason to believe that the deficit that would obtain today, if the dollar were to stabilize at purchasing-power parity with 1978, would be as much as three times what it was then. The reason is that Americans have become accustomed to the characteristics of the new imports and have made attachments with suppliers that may be expected to endure despite reversals in price and quality differentials. Also, suppliers themselves are able to take up some of the shock of exchange-rate changes through a reduction in their profit margins and cost-cutting measures. In addition, the fact that the United States is beginning to play catch-up rather than leader in a number of key areas of technology doesn't help, especially given that the resources to pay for R&D tend to come out of previous gains from trade.

Despite increased tariff protection on certain agricultural items (including cane sugar and winter vegetables), even the U.S. agricultural balance turned negative in 1986 after many years of large surpluses. The primary cause was the collapse of grain exports from more than $18 billion in 1984 to $10.6 billion in 1987. On the import side, fish and shellfish are among the most rapidly rising imports (15 percent per year since 1984).

The deficit in industrial supplies and materials declined by $7 billion. However this trend is not encouraging, as the fall in oil prices contributed to a reduction in the value of the oil import component of $19.5 billion. Thus the deficit for all other categories rose by $12.5 billion, with nonferrous metals, textiles, and iron and steel being especially poor performers. The two U.S. bright spots, chemicals and other materials, recorded slight increases in their surpluses, while displaying rapid growth in both exports and imports.

The shift to a negative capital-goods balance is perhaps the most dramatic and worrisome development. Complete elimination of a $33 billion surplus in eight years is stunning; yet the capital-goods

sector contains several of the fastest-growing U.S. export categories such as nonmilitary aircraft and parts, causing overall sectoral exports to grow by 50 percent between 1979 and 1987. The reversal from large surplus to slight deficit in capital goods is due to a startling 250 percent increase in imports, suggesting that U.S. competitiveness has been hurt by more than just the overvalued dollar. One remaining bastion of U.S. competitiveness in capital goods, namely Latin America, has been hamstrung by the debt crisis and related cutbacks in investment. We shall argue later that recovery in Latin America would have a disproportionately positive impact on U.S. trade in this vitally important area.

The really bad news is in the areas of autos and auto parts and consumer goods. Together these two sectors were responsible for 80 percent ($100 billion) of the increase in the U.S. deficit, as this brief list of U.S. competitive failure and foreign market penetration shows:

	exports	imports
Passenger car	+$2 billion	+$33 billion
Auto parts	+$6 billion	+$26.5 billion
Consumer non-durable	+$4 billion	+$26.5 billion
Consumer durable	+$1 billion	+$28 billion

Concluding the recap of Table 4A.3 is the following list of sectors showing an absolute decline in U.S. exports between 1979 and 1987:

Grains	–19%
Cotton	–23%
Tobacco	–8%
Coal	0%
Textiles	–12%
Iron and Steel	–24%
Other Metals	–28%

Source: Adapted from Table 4A.3.

The U.S. trade data clearly reflect the global trend toward high-technology trade. The United States has also been adversely affected by the general decline in primary product prices, although it has benefited from the fall in oil prices, improving its overall terms of trade in the 1980s.

Likely recipients of increased protection over the next few years include sectors with growing deficits and falling exports (textiles, iron and steel, and other metals), sectors moving from surplus to deficit

(textiles, machinery, and auto parts), and sectors displaying slow export growth and rapid import growth (consumer durables and passenger cars). In recent months the president has vetoed a congressional effort to impose additional restrictions on textile imports. The U.S.-Canada Free Trade Agreement is seen by a number of Canadian supporters as essential to safeguard some of its most vulnerable sectors, such as autos and auto parts, against the possibility of further U.S. protectionism. Mexico's own bilateral trade discussions with the United States (including the Framework Trade Agreement of late 1987) are being influenced by similar considerations. The new trade bill will have some effect on imports, as domestic firms will have an easier time showing injury, and retaliation will be harsher. Yet there remains a good deal of flexibility in interpretation, and the bill will no doubt be administered with one eye on the trade balance. The possibility of a new, sweeping change, such as a separate agreement on autos and parts analogous to the multifiber agreement, calls for vigilance on the part of exporters to the United States such as Mexico (and Canada).

Projections based on the first five months of 1988 show some improvement in the trade balance.[1] The total deficit is projected at $125 billion, down substantially from 1986 and 1987, with some forecasts as low as $115 billion. The agricultural balance is moving back to a small surplus, and oil imports should fall another $4 billion. But the capital-goods sector appears to be moving further into deficit, and the surplus in chemicals is eroding.

Another important note is that the deficit is not falling proportionately by country. Table 4.2 shows projected 1988 deficits and actual 1987 and 1986 deficits with Mexico, Latin America, and Japan. It is clear that the reduction in the U.S. deficit rests partially on an increase in exports to Latin America, and that it is thereby linked to and as fragile as the economic recoveries of high-debt countries in Latin America.

Mexican Trade by Country

Mexico is diversifying its exports, but its imports are becoming more concentrated (see Appendix Table 4A.4). The trends are clearest in the figures for trade with the United States. Mexico's exports to the United States represented just under 65 percent of its total exports, down from 70 percent in 1979. Conversely, imports from the United States rose from 63 to 65 percent between 1979 and 1986, remaining at 64.4 percent in 1987. Other growing markets for Mexico's exports

include the European Economic Community (EEC), Japan (Mexico's second trade partner), and Canada (Mexico's third partner). Exports to "other" countries, particularly Spain, have dipped sharply, from more than 11 percent to less than 4 percent of total export revenues. Mexico's trade with the rest of Latin America combined, which was initially 7.9 percent, rose by only one-half of 1 percent—less than its trade increase with Canada alone.

The regional composition of Mexico's imports has remained more stable. The United States, Canada, and Japan are increasing their percentages, while the fraction of imports from South American countries is falling. Hence, for both exports and imports, Mexico's North American connection as well as its new links with the Pacific Rim are playing a far greater role in its trade expansion than are Latin America and the Caribbean.

The United States remains the crucial trading partner for Mexico. If Mexico is to substantially increase its nonoil exports, an expansion of U.S.-Mexican bilateral trade is essential. If the United States is to revitalize flagging exports of machinery and industrial materials, debtor countries such as Mexico must experience an improvement in their foreign exchange position. An expansion of trade credits is only part of the solution, inasmuch as the growth in such imports calls for new investment incentives in Latin America that imply macroeconomic recovery from the current debt-imposed austerity.

Mexican Trade by Commodity

Exacerbating the shift in composition of Mexico's trade away from nontraditional exports has been the adverse behavior of its commodity terms of trade. Appendix Tables 4A.5 and 4A.6 provide lists of all items accounting for $100 million or more of Mexican exports or imports in 1987. For those commodity groups, the tables compare 1979 with 1987 trade values, as well as trends in current dollar prices over the same period. The price estimates represent the average price paid or received by Mexico, based on weight. As they do not take into account either product differentiation or quality differences, they are strictly correct only for homogeneous commodities.

The sectors to which Mexico must look if it is to continue the rapid expansion of nonoil export revenues, without further reductions in domestic consumption, are clear from Table 4A.4. Those sectors are the groups showing increases in both volume and price of exports over the last decade—namely, shrimp, beer, polyvinyl chloride, glass and crystal, steel bars and ingots, passenger

cars, motors, electrical cables, information-processing machinery, and other machinery parts. It is perhaps significant that of these commodities, only shrimp, the least impressive performer on the list, is a primary product. Moreover, as the trade balance in information-processing machinery is still strongly negative, the rising price is something of a mixed blessing.

Beer exports have been one of Mexico's notable success stories, overcoming several bottlenecks in production as well as increasing trade restrictions by the United States. In the way of backward linkages, some expansion of Mexico's glass industry has resulted from the increase in the export-related demand for beer bottles. Having already weathered the pains of rapid growth and the loss of special preferences under the generalized system of preferences (GSP), the Mexican beer industry is expected to continue its strong performance in the U.S. market.

The prognosis for Mexico's steel industry also seems to be favorable. It may need to diversify exports away from the United States to more rapidly growing markets elsewhere, but no new wave of U.S. protectionism appears imminent, and steel is one of the areas selected for bilateral treatment in the Framework Trade Agreement.

The auto and auto parts industries in Mexico are showing rapidly growing trade surpluses at a time when the United States is running large and highly visible deficits. The only factor that may protect Mexico from likely increases in U.S. protection is the domination of these industries by U.S. multinationals that are benefiting from production- and market-sharing in these industries. Whether the umbrella of special treatment for this sector will be extended to the growing Japanese presence in auto and auto parts production in Mexico for the United States or to the emergence of Mexican entrepreneurship in this area remains to be seen.[2]

As for Mexico's traditional raw material and primary product exports, trends have been less fortunate. As noted, demand in traditional markets (including the United States) has been limited at a time when most of Latin America was responding to the debt crisis with a reduction in domestic consumption and an increase in traditional primary product exports (agriculture and minerals). Unfortunately, these happened to be the very products exhibiting unfavorable short-term demand characteristics. As the countries of Latin America in entirety expanded their exports, prices declined precipitously, in some cases reducing aggregate revenues. The products below showed the largest price declines among exports from 1979 to 1987:

Copper	86 %
Polycarbons	79 %
Prepared Fruit and Vegetables	72 %
Artificial and Synthetic Fibers	34 %
Coffee	31 %

Source: Adapted from Table 4A.5.

Despite (and contributing to) the lower prices, export volumes increased by more than the price fall for every product except coffee, sometimes twenty-fold or more. Owing to these dramatic quantity increases, Mexico has been able to maintain the value of its raw material and primary product exports. But the cost is measured in terms of much greater reduction in domestic consumption, and greater use of domestic resources, than would have been true had relative prices remained constant. Notwithstanding these trends, there are many areas of both mineral and agricultural exports, including, in particular, high-unit-value commodities for the U.S., Japanese, and other OECD markets, where future export prospects could be impressive if Mexico were to improve its packaging, marketing, quality control, and linkages with foreign outlets.

For Mexico's imports, the first thing one notices is the shift away from capital goods toward intermediate goods, a trend that if sustained would be a disturbing indication that restructuring and growth are being dangerously postponed. The overall import levels for 1979 and 1987 are similar, but intermediate goods imports are up by one-third ($2 billion) while capital goods imports are down by one-half (more than $2 billion). The difference reflects both the different levels of confidence about the prospects of the Mexican economy and the additional intermediate goods necessary to support higher levels of industrial production. But it does not bode well for the diffusion of new technologies into Mexican industry.

Troublesome imports can be defined as those exhibiting rising international prices *and* rising import volumes. These are products that Mexico has not been able to substitute away from or produce in sufficient quantity domestically to reduce external demand, even over the course of several years.[3] A list of these products and their price rise and volume rise between 1979 and 1987 can be found in Table 4.3.

This list is long and varied, for the most part representing items crucial to industrial expansion and development. It will be interesting if not critical to observe the extent to which domestic production can substitute for such imports in the longer run.

On the other side are those cases of success in import policy that are reflected in expanded imports of commodities that have become cheaper on world markets, so that resources can be shifted away from less competitive domestic production. The increase in corn and fuel-oil imports in response to low international prices is an example of this type of success.

For foreign exchange–constrained economies, however, a second type of success is important—namely, successful substitution in production and consumption for increasingly expensive imports. But such success is much more difficult to determine. The problem is that from trade data alone, favorable outcomes are difficult to distinguish from deprivation of a needed import.

As Mexico's overall trade picture shows, the potential for expansion of imports from the United States results from an easing of its foreign exchange constraint. Yet since the 1982 crisis, Mexico's import picture has evidenced a classic "stop-and-go" cycle in which attempts to restore aggregate demand growth have led to rapid increases in imports and balance-of-payments problems, followed by capital flight and the need for further devaluation. What is necessary is to articulate import growth with expanded productive capacity, especially in sectors that are competitive in the international market. This calls for a significant increase in capital goods imports so that the economy can shift to a new and more efficient growth path. Table 4.4 tracks Mexican GDP growth and imports against long-term equilibrium benchmarks through the crisis years. In this table, *Optimal Imports* can be thought of as the level of imports consistent with a reference rate of GDP growth of 5.5 percent above the prior year's level. In some countries, a given level of GDP (income) generates a demand for foreign products; but in Mexico a given level of intermediate and capital goods imports plays a major role in determining the level of GDP (production). Thus Table 4.4 approaches the GDP growth level from the supply side. Neither the possible effect of economic restructuring toward greater openness on imports nor the effect of greater economic efficiency is reflected in the estimates given in this table.

Although imports are clearly only one constraint on growth, there is a strong correlation between the austerity-induced shortfalls in imports and the shortfalls in growth since 1982. The relationship may actually be stronger than shown, as capital-goods imports are cut back more than intermediate goods; in addition, differential cutback will retard production in future periods.

Real Exchange Rate Behavior in Both Countries

A large part of Mexico's restructuring effort has rested on maintenance of an undervalued exchange rate through 1987. The intent of government policy was to protect exchange reserves, to foster tradable goods production in general and nonoil exports in particular, and to discourage imports. Exchange-rate undervaluation was preferred to export subsidies because it involved no direct outlay by the government and is not regulated in the General Agreement on Tariffs and Trade (GATT) and in other national trade agreements.

The disadvantage is that the general bias against imports caused rapid price increases in certain intermediate and consumption goods, contributing to rates of inflation that reached 100 percent per year by 1987. The Economic Solidarity Pact, announced at the end of 1987, was designed in part to rid the system of inflationary expectations (eliminating so-called inertial inflation). Early figures indicate that the pact has surpassed expectations, at least in terms of official estimates of inflation-reduction (to under 1 percent per month as of September 1987). The pact includes voluntary price controls by the private sector, acceptance by the official unions of government wage adjustment, ceilings on the prices of basic commodities, and fiscal restraint by the state, along with a fixed nominal exchange rate. The elimination of inertial inflation was seen as a necessary precursor to a resumption of stable economic growth.

While import competition has aided the effort to reduce inflation in recent months, the policy of fixing the exchange rate has caused an erosion of Mexico's undervaluation. What amounted to a 30 percent undervaluation of the real exchange rate in mid-1987, relative to mid-1978, had all but disappeared by mid-1988. The impact of this reversal of real devaluation on total imports and the trade balance with the United States is already apparent (see Tables 4.4 and 4.5). The resultant slowdown in nonoil export growth will probably not appear in earnest until 1989. Appendix Table 4A.7 shows how changes in the real exchange rate were calculated as well as the relationship between real nonoil exports and under- or overvaluation of the peso. Note that annual averages conceal some of the fluctuations. For instance, just prior to the January 1982 devaluation, the peso was overvalued by closer to 30 percent, and there is evidence that since July 1988 the peso has again become slightly overvalued. (By using earlier base years, some Mexican government economists maintain that the peso is still relatively undervalued.)

Appendix Table 4A.8 shows the rapid appreciation of the dollar relative to the United States' major trading partners from 1980 to

1985; it also relates this overvaluation to the explosion of the U.S. trade deficit. The link seems very strong, inasmuch as the deficit increases during every year of overvaluation and decreases during every year of undervaluation. Since the estimates in Table 4A.8 were made, the dollar has been allowed to rise slightly and the trade balance has worsened (primarily through increased imports). However, if the United States were to return to its earlier degree of undervaluation, we could expect continued improvement in its trade balance—at the expense of Mexico, which is creeping toward overvaluation. But if Mexico is able to hold down its inflation rate, it may be able to maintain a slight undervaluation relative to other trading partners besides the United States—an undervaluation that would aid the country in its export diversification effort.

U.S.-Mexico Trade Interaction and Complementarities

Appendix Tables 4A.9 and 4A.10 provide some interesting insights into the nature of the U.S.-Mexico trade relationship. Table 4A.9 lists twenty nonoil commodities for which Mexico is among the twenty leading exporters and the United States is a leading importer. For 1979 and 1985, the table lists Mexico's exports and U.S. imports as a fraction of world trade and Mexico's share of the U.S. market, which is approximated by the ratio of Mexican exports over U.S. imports.[4]

Indeed, Mexico's share of the U.S. market is significant for many commodities and is substantially above the ratio of the two countries' GDPs (5 to 6 percent). Although the country's share in agricultural and mining products is eroding, substantial gains have been made in certain manufacturing areas, including several types of electrical machinery and internal combustion engines. In several other categories, such as alcoholic beverages, organic chemicals, glassware, and toys and sporting goods, it appears that Mexican export volumes have been pulled forward by rocketing U.S. import demand, with little or no increase in market penetration. The rapid growth in these categories of exports may not be sustainable if the United States returns to a policy of devaluation while Mexico's currency is allowed to appreciate. The performance of these exports will depend crucially not only on marketing savvy at the industry level but also, perhaps, on government-level trade agreements such as the sector-specific negotiations between the United States and Mexico envisioned in the Framework Agreement on Trade.

It is worth noting that several of the industries that have shown successful market penetration are dominated in Mexico by foreign multinationals. This special circumstance may limit the extent to

which domestic Mexican firms, operating without the distribution and marketing structure of their foreign counterparts, can follow the lead of those few manufacturing firms that have been able to increase their share of U.S. markets. Closer ties with Japan, one of the success stories in effective penetration of the U.S. market, may help in this regard.

Appendix Table 4A.10 presents further evidence of the relationship between Mexican export shares and U.S. imports. Note, first, that in sixteen of the twenty cases, Mexico's export share moved in the same direction as the U.S. import share. That direction was usually upward, as both the U.S. trade deficit and import levels rose dramatically over the period. It seems clear that rising U.S. import shares aid Mexican exports, whereas declining U.S. import shares cripple Mexico's export prospects.

Of the four products whose export share declined despite increased U.S. imports, three are nonferrous metals or minerals. Apart from the vagaries of exploration and extraction, international prices of nonferrous metals fell significantly during the period considered. The fourth contrary product, wood manufactures, is a declining component of global trade, falling from 1.6 percent of world imports in 1979 to less than 1 percent in 1985.[5] The share of a product in global trade does not seem to be a consistent factor in explaining Mexican export performance, because that share matches the trend in only six out of ten cases. By contrast, there is an 80 percent correlation with the U.S. import share, indicating that U.S. trade trends dominate in the Mexican case. In the category of fresh vegetables and alcoholic beverages, rising U.S. demand proved more important than falling world demand, causing Mexico's export share to increase. Similarly, coffee and inorganic chemical export shares declined along with U.S. import shares, despite rising world trade shares.

As mentioned earlier, the period from 1979 to 1985 was one of rapid import growth, unprecedented trade deficit expansion, and substantial overvaluation in the United States (see Table 4A.8). During this period, the import share of five of the twenty products declined. In every case of U.S. import share decline, Mexico's export share *and* market share fell. Since 1985, much of the undervaluation of the peso relative to the dollar has been eliminated. The U.S. deficit has peaked and is dropping, just as the overvaluation of the dollar has also disappeared.[6] Meanwhile, debtor countries still face tremendous pressure to expand their exports. It is a tautology to say that all countries cannot be net exporters—and unless Japan or the EEC displays a willingness to augment the role played by the United

States in accepting net imports from developing countries, export competition will become fierce. Mexico has shown its ability to export effectively in a "bull" market, albeit with multinational assistance, but its ability to compete in a "bear" market is suspect, in part due to its poor performance in those areas in which the United States is cutting back imports.

Continued growth of Mexico's exports, together with the effectiveness of its new export-led growth model, may be aided by the country's ability to diversify away from the U.S. market. But for the time being, access to the U.S. market remains the crucial determinant of Mexico's export potential, credit worthiness, and development capability. The United States, in turn, depends on Mexico for certain key exports, including oil, sees Mexico as important to political stability in Central America, and, in the past, drew on its neighbor for cheap and productive labor (although its migration policies give the impression that this last factor is a mixed blessing). It has become an increasingly accepted proposition that the bilateral relationship is far too important to be left to the raw forces of the marketplace. Aside from national security and moral reasons, the United States is faced with compelling economic reasons for managing its interdependence with Mexico. Notwithstanding the new labor-saving technologies, the United States is already increasing its economic efficiency by spinning off some labor-intensive stages of production to Mexico. New inventory-reducing production processes increase the importance of physical proximity to foreign suppliers. As development takes place disproportionately in the U.S. southwest and in northern Mexico, the opportunities for production sharing will extend beyond the twin plant and maquiladora levels.

Detailed product data on U.S.-Mexico trade are not generally available, so the analysis will begin with a discussion of the evolution of the overall trade balance between the two countries. The implicit assumption being made here is that U.S. exports to Mexico generally follow the pattern of total Mexican imports.

Mexico's trade balance with the United States demonstrates the dramatic reversal of the flow of international savings triggered by the debt crisis. The net outflow of debt-service payments has necessitated a fundamental realignment of the trade balance, from an average deficit of $1–2 billion in the 1970s to a $5–6 billion surplus after 1982. The two-year swing from a record deficit of $4.8 billion in 1981 to a record surplus of $7.5 billion in 1983 accounted for about 40 percent of the $30 billion growth in the U.S. trade deficit over the same time period! (See Table 4A.8.)

Fallout from the debt crisis in the form of slower growth of U.S. exports to developing countries has slowed economic growth and employment creation in the United States. Despite the relative tightness of the U.S. labor market, compared to the last ten years, the reduction of exports has had a direct negative effect on employment, and the change in the composition of exports has altered the pattern of production and investment away from the United States' comparative advantage. One particular example, as mentioned earlier, is the reduction in U.S. capital-goods exports resulting from the stagnation of the debtor country economies brought on by the debt crisis. We observed in Table 4A.3 the move from surplus to deficit in U.S. capital-goods trade. Much of the reversal was due to overvaluation of the U.S. dollar, but a surprisingly large portion is explained by the disruption in the pattern of trade with indebted developing countries.

Appendix Table 4A.11 details the labor embodied in U.S. trade. Although export-related employment has increased since 1979, the increase in net labor imported through trade was seven times larger. Appendix Table 4A.12 provides a hypothetical example of the effect on U.S. employment of a return to the precrisis trade pattern with Mexico. An expansion of U.S. exports to Mexico in keeping with the current pattern of Mexican imports would result in an overall increase in U.S. employment of 185,000 people. About 100,000 of this increase in employment would come from the $2.85 billion increase in capital-goods exports (machinery and equipment).

The final two columns of Table 4A.12 simulate a balanced increase of $6 billion in both Mexican imports from and nonoil exports to the United States. As Mexican nonoil exports are more labor intensive (even at U.S. labor coefficients) than are its imports, the net effect of a balanced expansion in bilateral trade could be expected to create employment in Mexico and to reduce it slightly in the United States. This result is consistent with the Heckscher-Ohlin nature of much of U.S.-Mexican trade, which is motivated by differences in relative factor endowments as reflected in factor prices (such as real wages). However, all sectors would not lose in the United States. In the machinery and equipment categories, more than 15,000 net new jobs would be created.

Developing country imports have traditionally moved toward capital goods as import substitution has taken place in other areas. Accordingly, machinery and equipment made up 48 percent of Mexico's imports and 44 percent of U.S. exports in 1987. But the share of capital goods in the Mexican import bill declined by 15 percentage points from 1979 to 1987, indicating that such items are

early casualties of import restrictions. Hence, with effective recovery and growth, their fraction of marginal imports might be closer to the 1979 proportion than to the 1987 proportion used in the above calculations.

In some measure, the decline in capital-goods imports in countries such as Mexico is a healthy adjustment to a correction in factor price ratios. High capital-goods imports in the period from 1978 to 1981 in Mexico were related to overvaluation of the exchange rate and other government policies that raised the price of labor and lowered the price of capital relative to their socially efficient returns. The resultant development was highly capital intensive and costly in terms of foreign exchange. Yet the drastic reduction in capital-goods imports after the crisis will exact a cost in terms of future productivity growth, modernization, restructuring, and technological progress. The capital stock will age, growth in leading sectors will be slowed, and exposure to new technologies will be diminished. Capital-goods imports, as opposed to direct foreign investment or licensing agreements, have been the primary source of technological transfer from the industrial countries (see Appendix Table 4A.13), and the benefits from relatively high levels of technologically advanced imports may well have obscured deficiencies in other areas of technological progress.

The capacity to absorb advanced technologies, adapt them to special circumstances, and design and implement further progress is crucial to any developing country that wishes to experience rapid economic growth under current world market conditions. Although such capacity is difficult to measure directly, several indicators of Mexico's ability relative to competing Latin American NICs is presented in Table 4A.13. Mexico fares well compared with the rest of Latin America in terms of statistics on higher education. Its college enrollment and graduation levels are in keeping with the population, and its GDP levels are growing more rapidly than those of Brazil and Argentina. But Mexico trails its competitors in the training of scientists and engineers in both absolute and per capita terms.

Another serious disparity is observed in the category of expenditure on technological development by country. Mexico's expenditure of $6 per person, less than 0.3 percent of GDP, is much smaller than that of other leading countries in the region, by a factor of 50 to 100 percent. Unless this gap is closed, Mexico may soon find itself at a competitive disadvantage relative to other Latin American exporters in a variety of products.

Much has been made of the privatization efforts of the Mexican

government. Spurred by the recommendations of economists, the International Monetary Fund (IMF), and the world banking community, Mexico has substantially reduced not only direct government involvement in the economy but also the government deficit by selling off or reorganizing inefficient state and parastatal enterprises. The distribution of researchers by area indicates that a similar privatization of research efforts might also be valuable. Researchers have gravitated toward public-sector employment to a much greater extent in Mexico than in the rest of Latin America. Not only might researchers outside the government face more pressure to be productive, but many of the best and brightest technical people in Mexico become members of the public sector (partly owing to their level of salaries, employment security, and potential for influence as *tecnicos*) and accordingly have little time for research.

One measure of a country's technological sophistication might be its ability to export capital goods. Mexico does not compare favorably with Brazil and Argentina in capital-goods exports, although the devaluation in 1982 had a very positive impact. There is an interesting contrast in terms of the fraction of capital-goods exports bound for developing countries. Mexico seems much less linked to the developing world than its hemisphere counterparts, and its geographical position—which assists in its penetration of the U.S. market—may work against its efforts to sell to less-developed countries.

Some of the dilemmas regarding the transfer of technology implicitly arise as a result of the very different ways in which the three most technologically advanced NICs in Latin America have chosen to import technology. Mexico relies almost exclusively on imports of capital goods, Brazil is by far the most open to direct foreign investment, and Argentina uses licensing arrangements much more than the other two countries. Each approach has its costs and benefits, as the following look at the trade-offs between methods of importing will suggest.

Lowering the cost of capital through government policy enhances technological progress and modernization, but it may also encourage inappropriate technologies in labor-surplus countries. The solution may be to use government policy to allow rapid expansion of demand and production. Domestic policies include aggregate demand management, countercyclical policy, and income policy. Foreign demand can be expanded and smoothed through exchange rate policies and export promotion. A stable business expansion fosters investment, and market expansion raises the return to innovation.

Multinational corporations (MNCs) are a controversial source of technological transfer. Do they speed the transfer of technology, exposing the host country and its labor force to new products and processes, as suggested by Findlay[7] and Mansfield?[8] Or do they hinder the domestic technology industry by eliminating broad areas of potential innovation and profit, as suggested by Lall,[9] and perpetuate the reliance of foreign suppliers of technology at the expense of the emerging domestic suppliers, as suggested by Marquez?[10] Do MNCs transfer new technology, whose assimilation will springboard the host to the frontier of the production possibilities curve, or do they unload standardized products and processes that are just good enough to turn a profit in the favorable business climate created for it by the host government?

The answers to these questions are complex. The degree of domestic exposure to transferred technology depends on the way technology is transferred. Exposure is lowest in the case of wholly owned subsidiaries, moderate for licensing agreements and turnkey factories, and greatest for joint ventures and production-sharing arrangements. A related dilemma is that the MNCs' willingness to transfer "core" technology is inversely related to the degree of host-country participation. A partial solution may be to make it desirable, if not necessary, to transfer newer technology. This could be accomplished not with the traditional incentives of preferential access to credit and monopoly power behind tariff barriers, but through provision of an attractive platform for exporting. The planks of this platform would include consistent exchange-rate policies, relatively low labor cost per unit of productivity, and a well-developed infrastructure, including transportation, telecommunication, and distribution networks.

It is now understood that most technological progress occurs in small steps rather than in leaps, à la Schumpeter. Similarly, to absorb and, more important, to adapt a technological advancement to conditions in the home country, one must be near the technological frontier. The problem is that bringing in high technologies far in advance of the existing level is of little value to domestic industry and labor, whereas encouraging MNCs in an already advanced sector may cripple the domestic producers. Lall and Streeten[11] indicate that MNC involvement inhibits domestic technological development even as it facilitates technological transfer. Katz and Albin[12] catalog cases of processes developed locally in Mexico and Argentina for steel working, petrochemicals, construction, and newsprint manufacturing, all of which are being used elsewhere in Latin America and Asia. These authors also show some correlation

between sectors with technologically advanced exports and sectors protected from MNC penetration.

The best response by countries seeking to import new technology via multinational involvement may be to look for ways in which the incentives directed to multinationals and domestic firms coincide. In addition to changing the traditional mode of MNC entrance so as to encourage direct participation by host-country firms (as described above), the technology-carrying MNC can be introduced upstream or downstream from the technologically advanced domestic firm if a joint venture or production-sharing arrangement is not feasible. As linkages evolve, it is in the best interests of both firms to minimize the cost of the final product so that technology transfer will be promoted in a way beneficial to both firms.

Mexico has chosen to severely limit the involvement of MNCs in its economy by restricting their participation to certain sectors and to minority ownership; in recent years, however, these conditions are being liberalized (as in the conspicuous IBM case). Although exceptions to the rules are more common since the debt crisis, Mexico's basic ambivalence toward MNCs remains. But methods of technology transfer that are not tied to MNCs—capital-goods imports, licensing, hiring of foreign personnel, and so on—all require foreign exchange, at a time when NIC debt and debt-service payments are still very high. In addition, the fact that much of the surplus from future gains from trade will reflect the innovation rents of product and process innovation (and the efficiency rents of market penetration), combined with the fact that equity investment tends to concentrate such rents within its domain, implies that if Mexico is to participate actively in the wave of future trade development, it will have to accommodate a significant increase in foreign direct investment while attempting to bring about the maximum degree of national participation in such equity ownership. The implication is that access to foreign markets is likely to go hand in hand with foreign direct investment, whatever the preferences of the recipient country (such as Mexico) might be. The trick is to determine ways in which Mexican capital can participate in the rents from international market penetration and product development. Such participation may well require Mexico to devote attention to the development of its own multinationals. Increasing U.S. trade policy accommodated to Mexican participation in its own market will likely be associated with the requirement that Mexico accept a growing role for U.S. direct investment (in order to capture a share of the associated rents).

Technology and the Future of the Trade Relationship

Part of the controversy over future North-South trade patterns is based on the assumption that the new robotics and microelectronics technologies in the advanced industrial countries will supplant the NICs' comparative advantage in labor-intensive manufactures. There can be disagreement on projections about the scope of the new technologies and the speed at which they will be introduced, but the definition of comparative advantage brooks no debate. How valid is the argument that the new technologies will lower the labor content of manufactures proportionately (in which case comparative advantage based on factor endowments will remain the same although the terms of trade may move against labor surplus economies)? And what about the argument that all manufacturing processes will be reduced to a man or woman at a console supervising machines, supported by a highly technical product design team and repair technicians (in which case competitive pressures will send LDC manufacturing back to the dark ages of handicrafts)?

It may turn out that the new industrial revolution in mechanization proves analogous to that of agricultural mechanization; in other words, because certain products and crops are more amenable to the new production methods than others, a new international order will appear. However, if the new technology is cost effective for a wide range of manufactures, the basic comparative advantage for a country like Mexico will reside in the provision of nontradable services rather than goods, and undocumented migration will increase drastically.

Evidence suggests that most projections of the impact of labor-saving innovations are overstated. Total labor costs are only 5 to 20 percent of the final production cost for most manufactured products. Thus, even significant labor savings accompanied by increases in capital costs will not produce spectacular cost savings. This assertion is substantiated by the observation that differential wage rates of five or six to one are often subordinate to the quality and availability of intermediate goods and market access considerations in the production location decisions of MNCs.

Despite our disagreements with those who feel that new technologies will fundamentally alter North-South trade relations, we agree that the capturing of innovation rents will be an increasingly important motivating factor for trade. A question for further research is how Mexico can best raise its level of technological sophistication—a crucial step toward increased participation in manufacturing exports over the next twenty years—while avoiding the pitfalls mentioned above.

General Equilibrium Estimates of the Potential Gains to Managed Interdependence

We applied a computable general equilibrium model of U.S.-Mexican economic interdependence developed by Americas Program researchers[13] in order to ask a hypothetical question: What would be more beneficial to the two countries: a unilateral elimination of U.S. tariffs, a 33 percent write-down of Mexico's foreign debt, or the repeal of the recent immigration reform and control act (IRCA)?

The resulting simulation indicated that elimination of U.S. tariffs would increase trade and consumption in the two countries combined. As Mexico's exports of consumer goods bring a higher net return, tradable goods production and exports would expand. For Mexico, employment in the exportables sector would be 450,000 greater by the year 2000, and imports of capital goods and intermediate goods from the United States would increase. But a net loss of 200,000 jobs would occur in the U.S. manufacturing sector, resulting in a $2.5 billion annual loss to the United States that would offset half of the $5 billion annual gain for Mexico. Clearly, the simple model we have employed shows that free trade without any attempt at policy coordination between the two countries would benefit Mexico at the cost of the United States. (Elsewhere we have shown that the benefits within the two countries would also be apportioned in a highly unbalanced fashion, with low-wage labor in Mexico and capital and upper-income cohorts in the United States gaining vis-à-vis losses by low-wage labor in the United States and capital and upper-income cohorts in Mexico.)[14]

In a second hypothetical case, Mexico's debt-services payments of about $8 billion would be reduced by one-third. This reduction would free even more dollars for the expansion of the Mexican economy, but weak domestic demand and export limitations would cause price declines both domestically and internationally. Gross gains to Mexico would again total nearly $5 billion, but net gains less U.S. losses would start near $1 billion and decline, turning negative after ten to fifteen years. It appears that debt relief is efficient only in the short run (five to ten years) and would work much better in combination with a new trade agreement. This example illustrates the interdependent character of trade, financial flows, and larger macroeconomic policy considerations. Pure debt relief is not enough, in and of itself, to benefit either or both economies. But without debt relief, attempts at liberalized trade or migration policies would tend to provide only minimal and distorted benefits to both parties.

IRCA, if funded and strictly enforced, has the potential to reduce

temporary undocumented migration to the United States by up to 2 million people. Even if all these returning migrants were able to find work in Mexico's informal agricultural and urban service sectors, Mexicans could lose $3 billion per year from IRCA in lower wages and productivity. The big loser, however, would be the United States, which would face higher consumer prices and lower productivity of capital after deporting this productive and low-paid segment of its work force. U.S. losses, net of the $1.2 billion gain to legalized migrants, could easily reach $10 billion per annum by the year 2000.

In summary, three options have been presented here. The first gained $5 billion for Mexico and lost $2.5 billion for the United States; the second gained almost $5 billion for Mexico and lost $4 billion for the United States; and the third lost $3 billion for Mexico and $10 billion for the United States. Ignoring complementarities, externalities, economies of scale, and other dynamic effects, we find that a combination of these policies would benefit Mexico at little or no cost to the United States. In addition, tariff reduction and debt relief, in a general equilibrium context, would reduce migration by almost 1.5 million, which is more than some estimates of the potential reduction under IRCA.

The search for a humane method of reducing Mexican migration to the United States continues on both sides of the border. But it is important that we recognize several important economic realities. Temporary migration from Mexico to the United States has a long history, during which U.S. employers have knowingly hired and often recruited Mexican nationals for jobs. Demographic pressures in Mexico are such that not only the prospects for prompt economic recovery but the stability of the government may rest on exporting more labor—both the labor embodied in traded goods and the labor acquired through direct migration. Job creation in Mexico lagged behind entrants to the labor market even when the economy was growing at 6 percent per year in the 1970s, and the past six years of economic stagnation have swelled the ranks of the underemployed. Continued and even expanded access to the U.S. market must be a necessary part of any new Mexican development plan, whether or not it is officially acknowledged. If stable relations are to be achieved between the two countries, as one of the more fundamental objectives on which trade policies must depend, absorption of Mexico's rapidly growing labor force at rising wage and productivity levels is essential. Fortunately, as its labor force growth will begin to decelerate by the mid-1990s, this problem is largely a transitional one. In addition, and perhaps fortunately for Mexico, the United States will be facing an increasing shortage of

labor relative to its aging national population as we approach the mid-1990s. Overall, there are profound demographic complementarities between the two countries, notwithstanding the enormous problems involved in accommodating a growing degree of labor market interdependence.

Restructuring in North America

Continued restructuring efforts in both countries are necessary to maintain growth and competitiveness into the next century. In Mexico the need is for massive expansion in the tradable-goods sectors as import-substituting industrialization gives way to export-led growth and a new commitment to openness. In the United States the emphasis is on developing new products, saving labor by spinning off certain labor-intensive products and stages of production, and modernizing industry through investment in more productive and labor-saving equipment and processes. The burgeoning U.S. service industry may be a restructuring counter to the long-run evolution of global production and demand, inasmuch as the current level of U.S. consumption is based on unsustainable levels of real wages, foreign borrowing, and resource consumption. Considerable progress has been made in these twin restructuring efforts, as can be seen in Table 4.6.

It is clear from this table that the composition of Mexican industry is changing, and that the change is closely related to export opportunities and performances. In an environment of stagnant domestic demand, output expansion is predicted on access to foreign markets and favorable foreign demand elasticities. The industries showing average or below-average export growth have declined, while those displaying rapid export growth have grown. The trend toward growth concentrated in high-export sectors will continue as new investment is drawn to these dynamic sectors. Lagging sectors will be characterized by excess capacity and low or negative profits, making them unattractive to new investors and lowering long-run sectoral productivity growth.

Restructuring has been proceeding in the United States as well, though not in such a dramatic fashion. The slowdown in U.S. productivity growth observed in the 1970s contributed to a decline in its international competitiveness, resulting in falling market shares at home and abroad. U.S. competitiveness has improved since 1985 with the decline in the value of the dollar, but the turnaround in productivity began earlier, in 1982. Table 4.7 does not include intangibles such as quality improvements, but it clearly reveals some

of the main contributors to the United States' resurgence in productivity and competitiveness as well as indications of its restructuring, though without weighing their relative importance.

The impressive tripling in U.S. manufacturing productivity is grounded in investment increases and growing research and development expenditures as well as in the paring of the workforce. Such notable productivity increases have led to improved international competitiveness, assisted by a fall in the relative value of the dollar and a reduction in wage costs relative to those of the United States' major trading partners.

The restructuring effort seems to have aided both productivity and competitiveness, inasmuch as the closing of inefficient plants tends to improve average productivity, and layoffs imply increasing capital intensities, falling wages, and increasing average labor productivity. Perhaps the most striking change is the shift in work organization toward Japanese methods, highlighted by greater labor participation in design, production, and profits.

Conclusion

We have seen that free trade between the United States and Mexico is neither practicable nor sufficient to put in place the incentives that would promote restructuring in either country. But considerable trade liberalization, along guidelines that take into consideration the interests of both partners, can provide large potential benefits. In addition, the cost of Mexican restructuring and related investment incentives call for some resolution of the debt impasse in order to free dollars for investment in Mexico, regardless of advances on the trade front and regardless of whether those dollars come from foreign sources or from repatriation of domestic "flight capital."

Similarly, some migration to the United States, in order to provide a vent for Mexico's surplus labor, seems essential despite the reasonable arguments that underlie the U.S. attempt to "control its border." A replay of "operation wetback" would be disastrous to Mexico's economic and political stability, independent of whatever progress is made in the areas of trade and finance. In the short run, a major effort at migration restriction would be the largest short-term threat to Mexico's stability, as a horde of job seekers returning to Mexico at this time would swamp its fragile recovery. But in the long run, trade rather than migration is the only avenue by which Mexico can expand output and employment beyond the limits of domestic demand. Debt relief is the bridge between the short and long runs, allowing Mexico to expand capacity and productivity in selected

export sectors much sooner than would occur if the present 6 or more percent of GDP is exported in the form of net savings outflows.

Our research indicates that across-the-board progress in all three areas would substantially aid Mexican development without measurable economic damage to the United States. If one were to take into consideration the dynamic effects of expanded regionwide markets, externalities, and learning-by-doing, as well as the incentives to investment in both countries, the gains to the United States might well surpass those to Mexico. In noneconomic terms, the perceived social costs of a higher level of temporary migration must be weighed against an increased threat of revolution, debt repudiation, foreign investment expropriation, or even armed confrontation. But in the long term, greater convergence in incomes and social welfare between the United States and Mexico would improve the security and international competitiveness of North America as a whole. For these reasons, U.S. trade policy toward its neighbor to the south must take a prominent and special place in its overall strategy.

Table 4.1 Global Trade by Broad Category, 1973, 1979, and 1985

Category	1973	1979	1985
Primary Products[a]	13.1%	10.2%	8.2%
Traditional Manufactures[b]	13.5%	10.4%	9.5%
Modern Manufactures[c]	13.7%	15.5%	20.1%
Other[d]	32.3%	36.8%	34.0%

Source: Adapted from Table 4A.1.

[a]Includes cereals, fruits and vegetables, oil seeds and vegetable oils, meat, cork and wood, milk and eggs, coffee, cocoa, spices, and derivative products.
[b]Includes iron and steel, iron ore and scrap, textiles, natural textile fibers, and clothing.
[c]Includes passenger cars, office machines and data processing equipment, petroleum products, organic chemicals, telecommunications, transistors and valves, aircraft, instruments, and medical and pharmaceutical supplies.
[d]The other twenty-six commodities include intermediate goods and certain manufactures not obviously fitting the other definitions.

Table 4.2 U.S. Trade Deficit, Selected Countries, 1987 and 1988 Projections (Billion Dollars)

	1986	1987	1988 (First Five Months)	1988 (Projected)
Total	145	150	55	125
With Mexico	5	6	2	2
With Latin America	12	13	5	6
With Japan	45	47	20	44

Source: U.S. Department of Commerce, *Survey of Current Business*, September, 1988.

Table 4.3 Price and Volume Rises, 1979–1987

Commodity	% Rise in Price	% Rise in Volume
Radio and telegraph equipment	133	12
Synthetic and resin pastes	87	29
Parts for electrical installations	41	10
Milk products	37	33
Chemical preparations for industry	31	6
Cellulose paste for paper	27	140
Natural and synthetic resins	22	37
Medical and analytical instruments	16	21

Source: Adapted from Table 4A.6.

Table 4.4 Mexican Import and GDP Data, 1981–1987 (Billions of Dollars)

	1981	1982	1983	1984	1985	1986	1987
Actual imports	23.9	14.4	8.6	11.3	13.2	11.4	12.2
Optimal imports	16.8	18.4	18.3	17.3	17.9	18.4	17.8
Difference	7.1	–4.0	–9.7	–6.0	–4.7	–7.0	–5.6
GDP growth	8.3%	–0.5%	–5.3%	3.7%	2.7%	–3.5%	1.1%
Optimal GDP growth			——	5.5%	——		
Difference	2.8%	–6.0%	–10.8%	–1.8%	–2.8%	–9.0%	–4.4%

Sources: Comercio Exterior, selected years; and *Informe Anual*, Banco de Mexico, selected years.

Table 4.5 Mexico's Trade Balance with the United States for Selected Years, 1960–1988 (Billions of Dollars)

Year	Exports	Imports	Balance
1960	455	856	–401
1965	633	1,025	–392
1970	847	1,567	–720
1972	1,297	1,774	–477
1974	1,738	3,779	–2,041
1976	2,158	3,779	–1,621
1978	4,510	4,867	–357
1980	10,072	11,979	–1,907
1981	10,702	15,470	–4,768
1982	11,129	9,006	2,123
1983	13,003	5,487	7,516
1984	13,972	7,393	6,579
1985	19,100	13,600	5,500
1986	17,300	12,400	4,900
1987	20,300	14,600	5,700
1988 (estimate)	24,000	22,500	1,500

Sources: United Nations, *Yearbook of Annual Trade Statistics*, for the years 1960–1984; and *Survey of Current Business*, for the years 1985–1987 and the first five months of 1988, which serve as the basis for the 1988 estimate.

Table 4.6 Restructuring of the Mexican Economy: The Effect of Openness

Sector	Production Increase 1981–1987	Export Volume Increase[a] 1979–1987
Synthetic resins	+83%	+5100%
Auto motors	+76%	+1500%
Cement	+22%	+410%
Synthetic fibers	+20%	+1500%
Beer	+6%	+420%
Iron and steel	–10%	+80%
Glass	–24%	–140%
Automobiles	–50%	+30%

Sources: Production data from Banco de Mexico and Banamex (*Review of the Economic Situation in Mexico*, February 1988); export volume data from *Comercio Exterior*, selected years.

[a]Relative to the average growth rate of +450 percent.

Table 4.7 Restructuring in the U.S. Economy: Sources of Productivity Growth and Gains in Competitiveness

	1974–1979	1983–1987
Manufacturing productivity growth[a]	1.5%	4.7%
Changes in underlying factors contributing to productivity growth	1979	1987
Real exchange rate trend[b]	100	89
Factor costs		
U.S. labor costs versus other industrial countries[c]	116%	102%
	1980–1985	1986–1987
Capital costs[d]	6.1%	5.2%
Technological progress	1979	1987
R&D expenditure as a % of manufacturing sales	1.5%	2.6%
R&D expenditure as a % of foreign level[e]	95.0%	113.0%
Manufacturing investment/	1976–1979	1980–1986
manufacturing sales	5.4	6.4
Restructuring: products and processes	1979	1985
Retirement of plant and equipment	$18.3 billion	$41.7 billion
Job losses from plant closings as	1973–1979	1980–1987
share of manufacturing labor force	3.6%	4.9%
Management strategies		
Contracts containing profit-sharing or work-rule	1979	1987
reduction provisions[f]	2%	40%

Source: Most of the information is drawn from Federal Reserve Bank of New York, *Quarterly Review* (Spring 1988).

[a]Total labor productivity in manufacturing.
[b]Index of the real exchange rate.
[c]Trade weighted average of Canada, France, Germany, Italy, Japan, and the United Kingdom, from Federal Reserve Bank of New York, *Quarterly Review* (Spring 1988).
[d]Real long-term government bond yields.
[e]Germany and Japan.
[f]As a percentage of the manufacturing labor force.

Table 4A.1 Total Imports of Market Economies by Major Products in 1973, 1979, 1983, and 1985 (Millions of Dollars and Percentage)

SITC Rev.2	Products	1973[a]			1979			1983			1985		
		Rank	Value	Share	Rank	Value	Share	Rank	Value	Share	Rank	Value	Share
333	Crude petroleum	1	39 541	7.6	1	211 180	13.8	1	221 816	13.0	1	169 975	9.4
781	Passenger motor cars	4	19 740	3.8	4	55 144	3.6	3	66 765	3.9	2	83 543	4.6
334	Petroleum products	7	12 528	2.4	2	66 138	4.2	2	28 597	5.2	3	82 073	4.5
751+752+759	Office machines, data-processing equipment, parts	20	7 201	1.4	16	22 245	1.5	7	38 499	2.3	4	54 899	3.0
67	Iron and steel	2	23 866	4.6	3	57 301	3.7	4	50 349	3.0	5	55 198	3.0
65	Textile yarn, fabrics; made-up articles	3	21 263	4.1	5	46 345	3.0	5	46 417	2.7	6	49 691	2.7
84	Clothing	9	11 479	2.2	6	33 926	2.2	6	39 057	2.3	7	46 953	2.6
784	Parts and accessories of motor vechicles	8	11 598	2.2	7	33 205	2.2	8	35 404	2.1	8	43 803	2.4
58+893	Artificial resins, plastic materials, articles of plastic	15	9 976	1.9	9	30 189	2.0	9	34 446	2.0	9	37 991	2.1
51	Organic chemicals	18	8 341	1.6	10	30 089	2.0	12	33 230	2.0	10	37 392	2.1
63+64	Wood manufactures, paper	6	12 753	2.4	8	31 065	2.0	11	33 295	2.0	11	36 191	2.0
341	Gas, natural and manufactured	48	1 687	0.3	19	17 463	1.1	10	33 995	2.0	12	34 922	1.9
04	Cereals and preparations	5	14 067	2.7	11	28 125	1.8	13	32 886	1.9	13	28 599	1.6
05	Fruits and vegetables	11	11 392	2.2	12	25 667	1.7	14	27 425	1.6	14	28 083	1.5
22+42+081 –081.42	Oil seeds, vegetable oils, oil cakes	10	11 396	2.2	13	24 541	1.6	15	26 502	1.6	15	25 584	1.4
764	Telecommunication equipment, parts and accessories	17	8 453	1.6	28	13 205	0.9	17	20 400	1.2	16	25 250	1.4
776	Transistors, valves, etc.	39	3 517	0.7	32	12 188	0.8	19	19 467	1.1	17	24 605	1.4
792	Aircraft	25	4 919	0.9	22	14 802	1.0	18	20 210	1.2	18	22 601	1.2
07	Coffee, tea, cocoa, spices, and manufactures thereof	28	4 591	0.9	15	23 511	1.5	21	18 585	1.1	19	21 745	1.2
782	Lorries, special vehicles	27	4 599	0.9	20	15 783	1.0	20	19 068	1.1	10	21 102	1.2
793	Ships and boats[b]	14	10 014	1.9	30	12 919	0.8	16	21 190	1.2	21	19 670	1.1
713	Internal combustion piston engines	24	5 138	1.0	26	13 229	0.9	27	15 523	0.9	22	18 897	1.0

874	Measuring, controlling instruments	47	2 040	0.4	34	11 329	0.7	28	15 289	0.9	23	18 008	1.0
32	Coal	35	4 141	0.8	29	12 983	0.9	30	14 625	0.9	24	17 760	1.0
52	Inorganic chemicals	34	4 161	0.8	24	14 541	1.0	25	16 039	0.9	25	17 644	1.0
01	Meat and preparations	13	10 978	2.1	17	19 094	1.3	23	18 379	1.0	26	17 408	1.0
03+081.42	Fish and preparations	32	4 313	0.8	23	14 603	1.0	24	16 489	1.0	27	17 276	1.0
24	Cork and wood	12	11 369	2.2	14	24 262	1.6	22	18 168	1.1	28	16 949	0.9
541	Medicinal, pharmaceutical products	26	4 818	0.9	31	12 367	0.8	29	15 098	0.9	29	16 265	0.9
749	Nonelectric machinery parts and accessories	29	4 502	0.9	21	15 365	1.0	31	14 624	0.9	30	15 770	0.9
287.3+684	Bauxite, alumina, aluminium	31	4 315	0.8	27	13 215	0.9	26	15 721	0.9	31	15 597	0.9
772	Electrical apparatus for electrical circuits, etc.	40	3 434	0.7	36	11 022	0.7	33	13 964	0.8	32	14 706	0.8
667	Pearls, precious stones	21	5 968	1.1	18	17 665	1.2	32	13 595	0.8	33	14 635	0.8
85	Footwear	42	3 056	0.6	40	10 184	0.7	36	11 667	0.7	34	13 682	0.8
821	Furniture	43	2 815	0.5	42	9 495	0.6	39	10 682	0.6	35	12 595	0.7
287.1+288.21 +682	Copper, copper ore, scrap	16	9 331	1.8	25	14 305	0.9	35	12 666	0.7	36	12 166	0.7
723	Civil engineering equipment	41	3 274	0.6	37	10 475	0.7	37	11 370	0.7	37	11 996	0.7
62	Rubber articles	38	3 615	0.7	39	10 333	0.7	38	11 240	0.7	38	11 993	0.7
02	Milk and products, eggs	30	4 380	0.8	35	11 259	0.7	34	12 762	0.8	39	11 443	0.6
281+282	Iron ore and scrap	22	5 765	1.1	33	11 455	0.8	43	9 514	0.6	40	11 038	0.6
881+882+883	Photo apparatus, photo cinema supplies, etc.	46	2 460	0.5	43	8 948	0.6	41	9 989	0.6	41	10 982	0.6
26–266–267	Natural textile fibers	19	7 924	1.5	38	10 461	0.7	42	9 742	0.6	42	10 580	0.6
894	Toys, sporting goods, etc.	45	2 472	0.5	47	7 229	0.5	45	8 708	0.5	43	10 244	0.6
714	Engines and motors	23	5 299	1.0	48	4 869	0.3	47	7 928	0.5	44	9 917	0.5
112	Alcoholic beverages	36	3 957	0.8	44	8 825	0.6	46	8 549	0.5	45	9 257	0.5
736	Metal working machine tools	33	4 160	0.8	45	8 330	0.5	48	6 907	0.4	46	9 097	0.5
741	Heating, cooling equipment	44	2 608	0.5	46	7 858	0.5	40	10 104	0.6	47	8 887	0.5
	Total of above		379 214	72.6		1 116 732	72.9		1 256 945	73.9		1 304 662	71.8
	Total market economies imports		522 500	100.0		1 530 900	100.0		1 700 200	100.0		1 817 900	100.0

Source: UN, *Yearbooks of International Trade Statistics*.

[a]Data for 1973 has been as far as possible adjusted to correspond to SITC/REV.2.
[b]Exports.

Table 4A.2 Increase in World Export Prices of Primary Commodities from Base Year 1970

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986
Corn	100.0	61.5	59.0	107.7	146.2	123.1	125.6	138.5	179.5	217.9	256.4	238.5	225.6	215.4	184.6	146.2	138.5
Beef	100.0	111.4	134.3	177.1	154.3	160.0	168.6	182.9	237.1	288.6	285.7	251.4	237.1	228.6	222.9	197.1	240.0
Oil seeds, oils, and fats	100.0	110.0	107.5	187.5	280.0	192.5	187.5	230.0	242.5	272.5	250.0	240.0	197.5	227.5	272.5	210.0	162.5
Fish	100.0	115.4	142.3	192.3	226.9	192.3	250.0	280.8	346.2	365.4	384.6	373.1	342.3	307.7	296.2	296.2	342.3
Sugar	100.0	94.1	152.9	205.9	617.6	423.5	241.2	170.6	164.7	205.9	588.2	358.8	176.5	176.5	117.6	88.2	129.4
Coffee	100.0	89.7	100.0	124.1	137.9	144.8	289.7	503.4	327.6	344.8	344.8	279.3	269.0	265.5	286.2	279.3	393.1
Fresh fruit	100.0	126.7	133.3	163.3	170.0	216.7	196.7	236.7	290.0	300.0	333.3	306.7	293.3	290.0	270.0	280.0	313.3
Agricultural raw materials	100.0	106.7	120.0	193.3	216.7	190.0	220.0	236.7	253.3	313.3	333.3	293.3	263.3	276.7	286.7	240.0	256.7
Cotton	100.0	102.9	111.8	194.1	223.5	188.2	250.0	238.2	229.4	244.1	294.1	270.6	226.5	250.0	252.9	220.6	179.4
Rubber	100.0	78.6	82.1	167.9	178.6	142.9	196.4	207.1	250.0	321.4	357.1	267.9	207.1	267.9	239.3	189.3	203.6
Hides and skins	100.0	93.9	193.9	224.2	169.7	145.5	215.2	236.4	309.1	497.0	303.0	278.8	254.5	321.2	415.2	366.7	372.7
Wood pulp	100.0	102.9	97.1	123.5	197.1	241.2	232.4	214.7	185.3	241.2	294.1	264.7	244.1	214.7	250.0	205.9	235.3
Minerals (excluding oil)	100.0	87.5	87.5	120.0	160.0	160.0	165.0	172.5	177.5	215.0	250.0	252.5	237.5	230.0	235.0	232.5	197.5
Nonferrous metals	100.0	95.2	95.2	135.7	166.7	128.6	140.5	150.0	164.3	214.3	238.1	209.5	183.3	185.7	181.0	169.0	166.7
Average increase of total	100.0	100.0	112.5	168.8	212.5	193.8	206.3	228.1	234.4	275.0	312.5	287.5	259.4	259.4	256.3	234.4	237.5
Crude petroleum	100.0	140.0	160.0	200.0	680.0	680.0	720.0	800.0	800.0	1160.0	2000.0	2240.0	2180.0	1920.0	1860.0	1820.0	1080.0
All primary products	100.0	105.0	115.0	175.0	265.0	250.0	265.0	295.0	300.0	375.0	500.0	505.0	470.0	445.0	435.0	410.0	330.0
Manufactures	100.0	105.9	111.8	132.4	164.7	185.3	188.2	202.9	232.4	267.6	294.1	279.4	270.6	258.8	255.9	255.9	302.9

Source: Table A17 in GATT, *International Trade 1986–87* (Geneva, 1987), p. 182.

Table 4A.3 U.S. Trade by Commodity, 1979, 1987, and 1988

	1979			1987 (Projected)			1988 (Estimated)		
	Exports	Imports	Balance	Exports	Imports	Balance	Exports	Imports	Balance
Total	182.0	209.5	–27.5	253.7	406.3	–152.6	310	435	–125
Food, feeds, and beverages	29.6	17.4	12.2	24.1	24.3	–0.2	24	22	2
Fruits and vegetables			0.0		3.7				
Grains	16.7			10.6					
Coffee		3.9			2.7				
Sugar		2.0			0.4				
Nonagricultural (fish, liquor)	1.2			1.8					
Industrial supplies and material	57.3	107.7	–50.4	66.7	110.1	–43.4	70	96.5	–26.5
A. Agricultural	6.3			6.4					
Cotton	2.2			1.7					
Tobacco	1.2			1.1					
B. Nonagricultural	51.0			60.4					
Coal	3.5			3.5					
Petroleum	2.0	59.9	–57.9	4.0	42.4	–38.4	8	42	–34
Paper	3.4	4.8	–1.4	6.1	9.2	–3.1			
Textiles	3.3	1.9	1.5	2.9	4.7	–1.8			
Chemicals	14.5	4.5	10.0	22.0	9.7	12.3	31	21	10
Other (minerals, rubber, wood)	8.5	2.4	6.1	10.9	4.3	6.6			
Steel and iron	3.8	10.0	–6.2	2.9	11.1	–8.2			
Other metals	10.8	10.7	0.2	7.8	13.8	–6.0			
Capital goods (except auto)	57.5	24.6	32.9	86.6	87.3	–0.7	86	100	–14
Electrical machinery	9.7	7.8	1.9	17.7	25.3	–7.6			
Nonelectrical machinery	36.3	14.8	21.5	51.5	53.9	–2.4			
Nonmilitary aircraft and parts	10.5	1.5	9.0	15.8	8.2	7.6			
Autos and parts	16.5	25.6	–9.1	25.0	85.3	–60.3	50	95	–45
Cars	4.7	14.8	–10.1	6.9	48.0	–41.1			
Consumer goods	12.4	30.6	–18.2	17.5	87.2	–69.7	22.5	63	–40.5
Durables	5.4	16.2	–10.8	6.5	42.8	–36.4			
Nondurables	6.3	12.0	–5.7	10.2	39.9	–29.7			

Source: UN, *Yearbooks of International Trade Statistics.*

Table 4A.4 Mexican Trade Data by Country, 1979–1987

	1979	Percentage 1979 Total	1986	Per Annum Growth 1979–1986	1987	Percentage 1987 Total	1986–1987 Growth
Exports							
Total	8,798	100.0	16,031	9.0%	20,656	100.0	28.9%
United States	6,180	70.2	10,652	8.0%	13,322	64.5	25.1%
Canada	75	0.9	194	15.0%	316	1.5	62.9%
CAM Common Market	137	1.6	205	6.0%	316	1.5	54.1%
South American Integration	415	4.7	635	6.3%	808	3.9	27.2%
Carribean Common Market	9	0.1	21	12.9%	73	0.4	247.6%
Other Latin America (Cuba, etc.)	131	1.5	341	15.0%	529	2.6	55.1%
European Economic Community	511	5.8	2,173	23.0%	3,008	14.6	38.4%
Other Western Europe	51	0.6	116	12.5%	113	0.5	–2.6%
Eastern Europe, Soviet Union	55	0.6	46	–2.2%	45	0.2	–2.2%
Japan	248	2.8	1,058	23.0%	1,349	6.5	27.5%
Other (Australia, New Zealand, India, China)	986	11.2	592	–4.9%	778	3.8	31.4%
Imports							
Total	11,985	100.0	11,432	–0.6%	12,223	100.0	6.92%
United States	7,540	62.9	7,386	–0.3%	7,876	64.4	6.63%
Canada	185	1.5	225	2.8%	355	2.9	57.78%
CAM Common Market	13	0.1	18	4.8%	22	0.2	22.22%
South American Integration	535	4.5	351	–4.3%	272	2.2	–22.51%
Carribean Common Market	23	0.2	1	–10.0%	6	0.0	500.00%
Other Latin America (Cuba, etc.)	88	0.7	63	–3.6%	95	0.8	50.79%
European Economic Community	2,014	16.8	1,826	–1.3%	1,980	16.2	8.43%
Other Western Europe	331	2.8	370	1.6%	346	2.8	–6.49%
Eastern Europe, Soviet Union	42	0.4	34	–2.5%	30	0.2	–11.76%
Japan	727	6.1	684	–0.8%	795	6.5	16.23%
Other (Australia, New Zealand, India, China)	487	4.1	473	–0.4%	447	3.7	–5.50%

Source: Comercio Exterior (April 1981 and April 1988 issues).

Table 4A.5 Mexico's Leading Exports by Commodity, 1979 and 1987

	1979 Value (Millions of Dollars)	1987 Value (Millions of Dollars)	1979–1987 Price Change
Coffee	575	492	–31%
Fresh vegetables	154	238	–18%
Tomatoes	207	200	–25%
Copper	54	161	–86%
Sulfur	79	159	202%
Shrimp	360	435	11%
Beer	20	217	12%
Prepared fruit and beans	51	100	–72%
Artificial and synthetic fibers	17	225	–34%
Fuel oil	n.a.	188	
Polyvinyl chloride	n.a.	104	
Plastics & synthetic resins	4	177	–21%
Policarbonic acids	1	159	–79%
Glass and crystal	47	205	35%
Cement	20	134	–22%
Iron and steel products	27	253	–29%
Steel bars and ingots	41	177	23%
Steel tubes and pipes	37	166	0%
Bars of silver	n.a.	361	
Passenger cars	93	1306	189%
Motors	52	1286	27%
Auto parts	160	444	–6%
Electrical cables	19	121	104%
Information-processing machinery	n.a.	218	
Machinery parts	18	121	44%

Source: *Comercio Exterior* (April 1981 and April 1988 issues).

Notes: As the commodity breakdown for 1979 was less detailed, some entries were not available. In addition, price calculations are approximate, based on export tonnage by commodity in the two periods.

Table 4A.6 Mexico's Leading Imports by Commodity, 1979 and 1987

	1979 Value (Millions of Dollars)	1987 Value (Millions of Dollars)	1979–1987 Price Change
Corn	102	284	–42%
Soybeans		220	
Fruit and vegetable oils	217	114	–4%
Milk products	64	135	37%
Celullose paste for paper	116	358	27%
Fuel oil	106	229	–13%
Polypropylene	107	112	47%
Chemical preparation for industry	182	253	31%
Pharmaceutical chemicals	136	129	–9%
Natural and synthetic resins	69	115	22%
Resin and synthetic paste products	42	101	87%
Iron and steel sheets	237	148	–9%
Ball bearings, clamps, pulleys, etc.	88	106	12%
Auto assembly materials	786	753	107%
Miscellaneous truck and auto parts	237	243	26%
Motors and other parts	120	103	–38%
Medical and analytical instruments	144	202	16%
Parts for electrical installations	178	277	41%
Radio and telegraph equipment	75	195	133%
Generators and electrical motors	124	150	33%
Pumps	270	179	–4%
Metalworking machinery	214	174	38%
Textile machinery and parts	254	117	31%

Source: Comercio Exterior (April 1981 and April 1988 issues).

Table 4A.7 Mexico's Real Exchange Rate: Over- and Undervaluation of the Peso, 1978–1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
Real nonoil exports (billions of $)	5.69	6.15	6.23	5.62	4.07	6.33	8.08	8.19	8.9	10 72	13
Percentage change		8%	1%	–10%	–28%	56%	28%	1%	9%	20%	21%
Peso/dollar exchange rate	22.77	22.81	22.95	24.5	56.4	120.1	185.2	310.2	637.4	1405.8	2300
Ratio of Mexico to U.S. wholesale prices	100/100	118.3/112.5	147.3/128.4	183.2/140.2	286/143	593.1/144.8	1010/148.2	155.4/147.6	2922.5/143.2	2292.5/143.2	15317/155.4
The nominal exchange rate consistent with the base real exchange rate and price movements in both countries (row 3 times row 4)	22.77	23.9	26.1	29.8	45.5	93.3	155.2	239.3	464.7	1066	2244
Percentage change in the real exchange rate relative to 1978: Purchasing power parity (row 3 divided by row 5: over 100 implies under-valuation, under 100 indicates overvaluation)	100	95	88	83	123	128	119	128	137	132	102

Source: UN, *International Financial Statistics*, selected years.

Table 4A.8 U.S. Real Exchange Rate: Over- and Undervaluation of the Dollar, 1978–1988

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988 (Estimated)
U.S. real exchange rate index (under 100 indicates overvaluation)	100	102	102	92	81	79	73	70	88	101	111
U.S. trade deficit	32	28	25	28	36	57	113	122	145	140	125

Source: Trade weighted real exchange rate index and trade data from *International Financial Statistics*.

Table 4A.9 Mexico's Export Shares, U.S. Import Shares, and Mexico's Market Penetration, 1979 and 1985

	1979			1985		
	Mexican Export Shares	U.S. Import Shares	Ratio	Mexican Export Shares	U.S. Import Shares	Ratio
Fresh vegetables	5.1%	6.1%	84.0%	6.3%	10.0%	63.0%
Sulfur	12.0%	15.0%	80.0%	5.5%	11.0%	50.0%
Power machinery	0.3%	14.0%	27.0%	—	7.0%	less than 2%
Crude minerals	2.8%	11.7%	25.0%	3.4%	11.0%	31.0%
Silver	6.9%	33.0%	21.0%	6.7%	41.0%	16.0%
Electric distribution machinery	1.8%	9.25%	19.0%	8.0%	24.0%	33.0%
Electric power machinery	1.15%	8.7%	13.0%	4.3%	27.0%	16.0%
Zinc	3.2%	2.8%	11.0%	2.5%	31.0%	8.0%
Inorganic chemicals	2.0%	19.0%	10.5%	1.6%	18.6%	8.6%
Glassware	1.1%	11.0%	10.0%	1.3%	22.0%	6.0%
Coffee	3.2%	31.0%	10.0%	28.0%	29.0%	10.0%
Cement	1.0%	11.0%	9.0%	2.0%	21.0%	9.5%
Wood manufacturing	1.3%	19.0%	7.0%	1.07%	28.7%	3.5%
Electric machinery	0.85%	14.4%	6.0%	1.5%	16.0%	9.4%
Rail vehicles	1.0%	18.0%	5.6%	—	15.0%	less than 2%
Organic chemicals	0.3%	7.3%	4.0%	45.0%	13.0%	3.5%
Toys, sporting goods	0.77%	25.3%	3.0%	1.2%	42.4%	2.8%
Alcoholic beverages	0.5%	26.0%	2.0%	1.2%	36.0%	3.0%
Internal combustion engines	.2%[a]	14.2%[a]	1.4%	5.2%	28.0%	18.6%

Source: UN, *International Trade Statistics Yearbook*, Volume 2: *Trade by Commodity* (1979 and 1985).

[a]1980 data.

Table 4A.10 The Relationship Between Mexican Export Shares and U.S. Import Shares, with Notes on World Trade Performance

Both increasing:	Electric machinery[a]
	Organic chemicals[a]
	Electric power machinery[a]
	Toys, sporting goods[a]
	Fresh vegetables[b]
	Alcoholic beverages[b]
	Internal combustion engines[c]
	Crude minerals
	Cement
	Glassware
	Electric distribution machinery
Mexico's export share expanding, U.S. import share falling:	None
Mexico's export share falling, U.S. import share rising:	Wood manufacturing[b]
	Nonmetalic minerals
	Silver
	Zinc
Both decreasing:	Rail vehicles[b]
	Coffee[a]
	Inorganic chemicals[a]
	Power machinery
	Sulfur

Source: Adapted from Tables 4A.1 and 4A.9.

[a]This commodity's share in world exports is rising.
[b]This commodity's share in world exports is falling.
[c]This commodity's share in world exports is unchanged.

Table 4A.11 Labor Embodied in U.S. Trade, 1979 and 1987

	Labor Coefficients	Export Workers, 979 (Thousands)	Net Labor in Trade, 1979 (Thousands)	Net Labor Workers, 1987 (Thousands)	Net Labor in Trade, 1987 (Thousands)
Agriculture, food, beverages, and tobacco	32.0	581	131	685	–6
Textiles	51.3	121	53	112	–69
Apparel	60.0	41	–195	46	–360
Leather	36.7	36	25	69	31
Wood	37.9	53	26	71	32
Rubber and synthetics	52.3	44	10	111	81
Nonmetallic minerals	29.8	68	–7	84	62
Paper	30.3	54	–41	137	–70
Chemicals	22.2	270	147	260	146
Petroleum and derivatives	19.0	24	–685	48	–456
Iron and steel	25.5	68	–111	39	–111
Other metals	29.8	243	–3	133	–102
Nonelectric machinery	30.5	779	461	838	–39
Electric machinery	41.1	281	55	388	–166
Transportation equipment	38.5	447	–246	513	–1431
Plastics and miscellaneous manufacturing	46.9	386	–321	414	–1664
Furniture and footwear	54.5	56	–77	32	–86
Total		3,552	–778	3,980	–4,208

Source: Labor coefficients from the Michigan Trade Model, courtesy of Professor Bob Staiger. They were computed by inverting the 1976 input-output matrix of the United States.

Notes: Labor embodied in imports equals export workers minus net labor in trade. Employment figures are calculated by multiplying labor coefficients with trade values, adjusted to 1976 prices.

Table 4A.12 U.S. Employement Effect of a $6 Billion Increase in Exports to Mexico With and Without a Corresponding Increase in Imports

	Labor Coefficient	Change in Exports (Billions of Dollars)	Change in Employment (Thousands)	Change in Imports (Billion of Dollars)	Change in Empllovment (Thousands)	Net Employment Change (Thousands)
Agriculture	34.0	0.54	18.40	0.75	25.33	–6.93
Nonmetallic minerals	29.8	0.13	3.80	2.78	8.32	–4.52
Food, beverages, tobacco	29.2	0.23	6.60	0.63	18.50	–11.90
Textiles and apparel	55.0	0.08	4.30	0.23	12.77	–8.47
Leather and wood	37.0	0.03	1.00	0.10	4.00	–3.00
Paper	30.3	0.30	9.00	0.11	3.27	5.73
Petrochemicals and petroleum products	19.0	0.50	9.40	0.37	6.92	2.48
Chemicals	22.2	0.68	15.00	0.53	11.75	3.25
Plastics and miscellaneous manufacturing	46.9	0.14	6.40	0.08	4.17	2.23
Iron and steel	25.5	0.31	7.90	0.30	7.83	0.07
Metal products	29.8	0.11	3.40	0.30	9.08	–5.68
Transportation equipment	38.5	0.87	33.30	1.62	62.17	–28.87
Electrical machinery	41.1	0.50	21.10	0.22	8.67	12.43
Nonelectrical machinery	30.5	1.49	45.50	0.45	13.50	32.00
Total		5.90	185.10	3,980.00	–4,208.00	–11.17

Source: Labor coefficients from the Michigan Trade Model, courtesy of Professor Bob Staiger. They were computed by inverting the 1976 input-output matrix of the United States.

Notes: Labor embodied in imports equals workers minus net labor in trade. Employment figures are calculated by multiplying labor coefficients with trade values, adjusted to 1976 prices.

Table 4A.13 Mexican Data on Science and Technology: A Comparison with Brazil and Argentina

	Argentina	Brazil	Mexico	Central America	Andean Group
College Students (in thousands)					
1970	275	430	248	63	465
1975	597	1090	562	135	965
1980	491	1409	898	239	1335
Annual growth (1975–1980)	–3.5%	5.0%	10.0%	12.0%	7.0%
Graduates (in thousands)					
1970	24	64	10	2	32
1975	33	185	45	7	46
1980	37	234	70	11	84
Annual growth (1975–1980)	2.0%	5.0%	9.0%	10.0%	13.0%
Scientists and Engineers (in thousands)					
1982	19	32.5			
1984			18		

	Argentina	Brazil	Mexico	Chile	Venezuela
Total Spending on Technology Development[a]					
Total (in millions of U.S.$)	684.	1231.	443.	98.5	253.
Percentage of GDP	0.47	0.58	0.27	0.41	0.43
Per capita (U.S.$)	24.21	9.28	6.05	8.57	16.81
Approximate population (in millions)	28.25	132.65	73.2	11.5	15.1
Approximate GDP (in billions of U.S.$)	145.5	212.2	164.1	24.0	58.8
Distribution of Resources (%)					
University	45	—	46	82	61
Government	37	—	51	10	30
Private sector	7	—	1	1	1
Other	12	—	2	8	8
Payments Associated with Technology Transfer (in millions of U.S.$)					
Direct foreign investment	251 (12%)	2635 (43%)	709 (11%)		
Imports of capital goods	1460 (70%)	3304 (54%)	5485 (82%)		
Licensing fees	361 (17%)	218 (4%)	463 (7%)		
Total	2072 (100%)	6157 (100%)	6656 (100%)		
Exports of Capital Goods (in millions of U.S.$; % to developing countries)					
1970	45 (72%)	79 (72%)	87 (26%)		
1975	274 (82%)	546 (61%)	196 (46%)		
1980	378 (76%)	2167 (61%)	324 (78%)		
1982	421 (46%)	2115 (56%)	361 (10%)		

Source: Francisco Sagasti and Cecilia Cook, "La Ciencia y La Technologia en America Latina Durante Decenio de Losochenta," *Comercia Exterior*, December 1987, Vol. 37, No. 12.

[a]Data for the following years: 1980, Argentina; 1982, Mexico, Chile, Venezuela; 1984, Brazil.

Notes

1. As this chapter is being written, the most recent figures (for September 1988) indicate a new increase in the trade deficit, largely due to an increase in imports reflecting a strengthening of the dollar in the summer months.

2. Terutomo Ozawa and Clark W. Reynolds, "The New 'U.S.-Mexico-Japan' Connection: Trilateral Economic Interaction and Regional Integration in the Pacific Rim," presented to the UNAM conference on Mexico and the Pacific Rim, October 14, 1988.

3. Of course, these goods are not "Giffin goods," given that the quantity demanded increases as prices rise. A useful example might be the semiconductor industry, in which profitable computer manufacturers have bid up prices despite a substantial increase in the quantity supplied.

4. Needless to say, not all of Mexico's exports go to the United States (see Table 4A.4). Nonoil exports, however—especially exports of manufactured goods—are more concentrated with respect to the United States than the 65 to 70 percent figure in Table 4A.4 would indicate.

5. Again, see Table 4A.1.

6. Information regarding Mexican and U.S. real exchange-rate movements is found in Tables 4A.7 and 4A.8.

7. See R. Findlay, "Relative Backwardness, Direct Foreign Investment, and the Transfer of Technology: A Simple Dynamic Model," *Quarterly Journal of Economics* (February 1978).

8. E. Mansfield et al., *Technology Transfer, Productivity, and Economic Policy* (New York: W. W. Norton, 1982).

9. S. Lall, *The Multinational Corporation* (New York: Holmes & Meier Publishers, 1980).

10. V. Marquez, "A Framework for Assessing Technological Development: The Case of Mexico," in *Technology Assessment and Development* (New York: Praeger Publishers, 1982) pp. 92–117.

11. Lall and Streeten, *Foreign Investment and Transnationals in Developing Countries* (Boulder, Colo: Westview Press, 1977).

12. Katz and Albin, *From Infant Industry to Technological Exports: The Argentine Experience.* (Buenos Aires: IDB/ECLA Research Program in Science and Technology Working Paper No. 14, 1978).

13. R. McCleery, "U.S.-Mexican Economic Linkages: A General Equilibrium Model of Migration, Trade, and Capital Flows" (Ph.D. dissertation, Stanford University, 1988).

14. Some of the same issues are raised in more detail in C. Reynolds and R. McCleery, "The Political Economy of Immigration Law: Impact of Simpson-Rodino on the United States and Mexico," *Journal of Economic Perspectives* (Summer 1988), pp. 117–131.

chapter five

Structural Change and Trade in Brazil and the Newly Industrializing Latin American Economies

Claudio R. Frischtak

The purpose of this chapter is to conduct an exploratory discussion concerning the shifts in the competitive structure of major Latin American economies over the last two decades. We are particularly interested in the changing competitive position of Brazil, which has been unable in the 1980s to sustain its impressive record of growth and diversification of manufactured exports into areas of increased skill-intensity and technological sophistication. Nonetheless, Brazil, together with Mexico, continues to be the major continental player in the international market. Its movement toward emerging areas of comparative advantage now depends on its ability to adopt a longer-term strategy of adjustment and modernization.

Section two situates the first- and second-tier Latin American newly industrializing countries (NICs)—respectively, Brazil and Mexico, and Argentina, Chile, and Colombia—in the world economy. Through an analysis of shifts in revealed comparative advantage (RCA), this chapter attempts to pinpoint the major changes that have occurred in the production structure of these countries and in the competitive standing of key sectors.

Although indicators of revealed comparative advantage are suggestive of individual country patterns of international specialization, they fail to establish the significance of these countries' exports in world markets. Section three thus describes the relative position both of these major Latin American countries in the world and of U.S. export markets during the 1965–1985 period. The section also suggests that, in addition to Mexico, only Brazil has had any significant penetration into the U.S. market, in terms of number of sectors and market growth rates, that might continue to generate a perceptible demand for protectionism into the next decade.

Although there are a number of actual and potential conflict areas in primary products, this demand has been driven by the expansion of manufactured exports. The last part of the chapter therefore focuses on the conditions that could sustain such dynamics, pointing to the constraints facing Brazilian manufactured exports at the end of the present decade and to their prospects in the 1990s.

The Latin American NICs: Growth and Structural Change

There are at least five Latin American countries that can be considered newly industrializing. It is useful to separate them into two tiers, in view of the substantial differences in their economic size and growth dynamics (see Table 5.1). Brazil and Mexico are in the first tier. They are the largest economies of the region, and exports are playing an increasingly important role as the engine of their growth. Indeed, whereas the rates of export and GDP growth in the period 1965–1980 were not far apart, in 1980–1986 they diverged considerably, given that exports grew substantially above GDP.

Argentina, Chile, and Colombia are in the second tier. Their performance has been uneven. Argentina and Chile were the poorest performers in terms of GDP growth for both periods (1965–1980, 1980–1985), whereas Colombia came closer to the developing economies' average. In terms of export growth, Argentina's record was unimpressive, particularly in 1980–1986. The growth of Chile's exports slowed down more recently, and even Colombia's export recovery, although it showed considerable improvement over 1965–1980, was not much above the average of other developing countries. What those countries share, however, is a large export growth potential (which, in the case of Chile and Colombia, is starting to be realized) as well as increasingly effective export policies and institutional arrangements. In this sense, they set themselves apart from such countries as Peru and Venezuela, which have relatively large industrial sectors and would be next in line for inclusion in the second-tier group.[1]

Like most other Latin American countries, these first- and second-tier economies have undergone a dramatic adjustment on their trade account. In order to generate the surpluses necessary to service interest on their massive external debts, they have had to contract imports at fairly high rates (varying in the period 1980–1986 from -3 percent per year for Colombia to -13.8 percent per year for Argentina) while deepening their integration into world export markets. This tension between the need to restrict imports (or at least contain their growth) and to expand exports was experienced even

before this decade, as reflected in the substantial instability of these countries' competitive structures (i.e., the relative competitive position of different sectors of the economy) since the late 1960s.

The extent of structural change during the last two decades can be seen in Table 5.2, which illustrates the intensity of the shifts in these economies' revealed comparative advantage between 1965 and 1985.[2] The difference in the pace of structural change between the Latin American NICs and a more mature and stable economy such as the United States is striking: It suggests that the competitive structures of these Latin American economies were changing three to five times more rapidly than those of the U.S. economy during the same period.

To assess at a more detailed level the ways in which the relative competitive positions of the productive sectors of these five Latin American economies have changed over the last twenty years, we have calculated RCA indexes for all two-digit International Standard Industrial Classification (ISIC) level sectors in 1965 and 1985. These indexes are quite sensitive to the position of individual sectors in each national economy, and their changes are indicative of shifts with respect to the world price-performance frontier.

The same period was characterized by significant changes in the Brazilian economy (see Table 5.3). Of the ten sectors with the largest RCAs in 1985, four did not exist two decades earlier: animal feed, oil seeds, footwear, and fruits and vegetables. From 1965 to 1985, the average annual growth rates in RCA for footwear and oil seeds were particularly high, 25 percent and 10.4 percent, respectively. In addition, there were five other sectors with RCAs greater than or equal to one in 1985, which during 1965–1985 improved their RCA position at rates higher than 5 percent per year: pulp and paper, iron and steel, travel goods, rubber manufactures, and nonferrous metals.

Since 1980, there have been two important trends in the competitive dynamics of the Brazilian economy. On the one hand, an acceleration has occurred in the rate of change in RCA for a few of these high-growth sectors. This is particularly true of the intermediates, such as iron and steel (which experienced per annum growth of 6.9 percent between 1965 and 1985 and per annum growth of 13.4 percent between 1980 and 1985), and nonferrous metals (24.6 percent and 40.1 percent, respectively). To these we should add petrochemical products, inasmuch as their RCA index jumped from .01 to .55 in just five years—a compound growth rate of 147.9 percent. On the other hand, a disturbing movement occurred—namely, a reversal of the substantial gains in RCA achieved in the 1970s in a number of the more technologically sophisticated sectors (including

electric and nonelectric machinery, transport equipment, and instruments). These gains turned into competitive losses (again in terms of RCAs) in the 1980s (see Table 5.4). The inability of Brazil to sustain gains in higher value-added, more specialized (noncommodity) products can be traced to a combination of policy distortions and real shocks, as will be further discussed in the fourth section of this chapter.

Between 1965 and 1985 marked shifts also occurred in the competitive structure of the Mexican economy (see Table 5.3). Among the top ten sectors (in RCA terms), four showed up in 1985 that had been absent in 1965: petroleum, electric machinery, beverages, and plumbing, heating, and lighting equipment. The more traditional food and crude materials–related activities lost ground to both mineral fuels (petroleum) and machinery, which became the two growth poles (in RCA terms) in the 1980s. Indeed, between 1980 and 1985, the rate of per annum growth in RCA for petroleum reached 21.6 percent, whereas such sectors as nonelectric and electric machinery recovered from the competitive shock of the oil boom and expanded their RCAs at 28.9 percent and 51 percent, respectively (see Table 5.4).

Oil seeds, leather, sugar, and petrochemicals were the sectors that emerged in the Argentine economy with the largest indexes of RCA since 1965 (see Table 5.5). Yet, it is noteworthy that the only sectors to consolidate their competitive standing in the 1980–1985 period were commodities such as petrochemicals (with the related segments of synthetic rubber, plastics, and petroleum), vegetable oil, and, to a lesser extent, iron and steel. Most other competitive sectors (oil seeds, leather, fish and fish preparations, and nonferrous metals) achieved their greatest gains in the 1970s, after which many stagnated or retrogressed. Equally striking was the loss of position after 1975 experienced by such higher value-added and skill-intensive sectors as after electric and nonelectric machinery, and transport equipment.[3]

Chile presents a case of relatively successful specialization along crude agromineral exports and their subproducts. The new sectors that emerged in Chile between 1965 and 1985 were wood, pulp and waste paper, and crude animal and vegetable materials. Most of the competitive gains obtained in these and other primary areas during the 1970s were consolidated in the most recent period of analysis (1980–1985). Moreover, in the cases of wood manufactures, fruits and vegetables, and metalliferous ores, the pace of competitive gains accelerated substantially in 1980–1985; their RCAs grew at per annum rates of 36.9, 18.2, and 21.9 percent, respectively, compared with 17.6, 11.7, and 5.3 percent for the 1965–1985 period as a whole.

Colombia's integration into the world economy has been driven, to an even greater extent than for Chile, by exports of agricultural and raw mineral products: Coffee occupied the preeminent place, with an RCA of 57.7 in 1985. Other products that substantially improved their positioning in the period 1965–1985 were crude animal/vegetable materials, sugar, fish, coal, and fruits and vegetables. Yet only the latter two (in addition to petroleum, a sector revived after a long period of stagnation) actually sustained those gains in 1980–1985; the others either stagnated or regressed. Aside from these agromineral segments, substantial competitive strides can be traced only to travel goods; these strides took place largely between 1970 and 1975, when the RCA for travel goods jumped from .15 to 4.8.

In sum, all five Latin American NICs have undergone considerable shifts in their competitive structure in the last twenty years. To different degrees, Brazil, Argentina, and Colombia face the complex task of restructuring their economies to regain the competitive momentum of the 1970s. For Argentina (and, to a lesser extent, Colombia), these gains occurred mostly at the beginning of the decade (with the important exceptions, in the case of Argentina, of seed oils and petrochemicals and related products; and, in the case of Colombia, of coal and fruits and vegetables). The most substantial improvements in Brazil's competitive structure came in the late 1970s, but they proved unsustainable in the critical skill-intensive and technologically more sophisticated areas.

Both Mexico and Chile, on the other hand, seem to have undergone significant changes between 1980 and 1985; in particular, both had some success in repositioning their economies with respect to world markets. Although our latest data refers to 1985, there is evidence that this process of specialization and exploitation of niches of comparative advantage (in machinery for Mexico, and in agromineral subproducts for Chile) has continued, further consolidating the competitive standing of these countries.

The changing competitive strength of specific sectors within key Latin American economies is captured not only by shifts in their revealed comparative advantage; it is also reflected in the extent of penetration of Latin American exports and their market share dynamics. The next section examines the significance of these exports in both the world markets and the U.S. market; it also discusses the extent to which their expansion is expected to generate a protectionist response.

Latin American Export Penetration and Demand for Protectionism: A Preliminary Analysis

In 1985, the penetration of Latin American NIC exports in world markets reflected, in large measure, the outward expansion of the Brazilian economy over the previous two decades. There were thirteen cases of one-digit sectors in which world market share was greater than percent; of these, six were of Brazilian origin (see Table 5.6). Brazil displayed the only two cases whereby the manufacturing sectors commanded relatively high shares (chemicals and basic manufactures, at 1.2 percent and 1.9 percent, respectively). A similar pattern of single-country concentration of high-share sectors was found at a more disaggregated (two-digit) level. Out of twenty-four instances, five major Latin American countries participated with more than a 3 percent share in the world market; in thirteen instances, these were Brazilian exports. Similarly, out of five instances of manufactured goods, three were of Brazilian origin.

A perusal of two-digit export sectors reveals that, with a few exceptions, high-share exports of major Latin American countries consisted of agromineral products in 1985. Most were of a traditional nature and were historically associated with the country's comparative advantage: coffee and sugar from Brazil, live animals from Mexico, processed and nonprocessed grains, as well as leather, from Argentina, nonferrous metals and metalliferous ores from Chile, and coffee from Colombia. As already suggested, the few high-share nontraditional exports (i.e., both primary and industrial products, which came to be part of these countries' export basket since 1965) were mostly of Brazilian origin. (The only two other exceptions were oil seeds from Argentina and animal feed from Chile.) These exports also included price-sensitive commodities, such as animal feeding stuff, oil seeds, iron and steel, and pulp and paper.

Penetration into the U.S. market resembles penetration into world markets. Brazil, still an important actor by Latin American standards, overshadows other major countries, with the significant exception of Mexico (see Table 5.7). The asymmetric nature of Mexico's trade relations with the world as compared to its trade relations with the United States is reflected in the disproportionately large number of high-share sectors participating in the U.S. market.

At the two-digit level of disaggregation, for example, Mexico has ten times as many high-share sectors in the U.S. market than in world markets (compare Tables 5.6 and 5.7). This differential is similarly pronounced in the case of manufactured goods: Whereas no Mexican manufactures achieved a significant share in world markets, all four of its one-digit manufacturing sectors participated in the U.S.

market with more than 1 percent share, and nine two-digit sectors had more than a 3 percent share of that market.

A complementary perspective on the competitive position of these major Latin American countries can be gleaned from the behavior of export market share dynamics in the 1965–1985 period (see Table 5.8). If by high-growth sectors we mean those that have averaged 10 percent or more in per annum growth over the period, at the one-digit level all five countries have made significant gains in at least two instances. For Brazil, these gains were particularly pronounced in the manufacturing sectors, whereas for Chile they were concentrated in natural resource-based segments (such as fruits and vegetables, animal feeding stuff, wood lumber, and animal oils and fat). In all other countries, the high-growth sectors were in both primary and secondary activities.

Neither a market-share nor a market-growth approach (particularly when growth is measured over such long periods of time as those under discussion here) can provide a complete indication of the substantiveness of these countries' competitive gains (and the probability that these gains will trigger a protectionist response). Table 5.9 lists all of the two-digit sectors that achieved substantial share growth (above 10 percent a year between 1980 and 1985) and significant rates of penetration in the U.S. market (more than 3 percent in 1985). These sectors correspond to the most competitive areas, and, in some cases, they are the most prone to attract trade restrictions (or, at least, to elicit significant demand for protectionism from U.S. import-competing industries). The focus on the U.S. market is justified: It is the largest market for developing countries' manufactured exports; it has the highest growth potential (in absolute terms) for absorbing these exports; and, since the mid-1970s, it has been the source of the greatest number of protectionist actions affecting Latin American exports.

Although no simple relationship can be established between the degree of export competitiveness and the demand for protectionism, Table 5.9 allows us to make some informed inferences regarding potential conflict areas. In the case of Argentina, the major source of conflict will continue to be the developed countries' agricultural subsidies. These subsidies are GATT-inconsistent; they also constitute a major barrier to the expansion of Argentina's agricultural exports (such as exports of dairy products). Yet, the contending parties will be mostly the EEC and Japan. Both Argentina and the United States have a strong competitive position in agricultural commodities and subproducts, and in this trade policy area their interests will tend, over the longer term, to converge.

Conflicts cannot be excluded, however. Argentina, like a few other Latin American countries, already bears a disproportionate share of countervailing (CVD) and antidumping duty (ADD) cases. Although its overall share of the U.S. market was just 0.3 percent in 1985, its share of CVD cases was 1.4 percent and its share of ADD cases was 3.3 percent. Nonetheless, in its area of greatest competitive advantage (agricultural commodities), the probability of conflict with the United States will be a decreasing function of time. In fact, the U.S. proposal to phase out all agricultural subsidies by the year 2000, if accepted and implemented, may significantly benefit Argentina. Finally, the large gains in petrochemical commodities are not expected to attract a protectionist response, in view of the constrained world supply and the importance of these intermediates to producers of final goods.

Chile may endure localized problems with certain food exports such as grapes and other fresh fruits, which have attained increased dominance in the U.S. northeast market. Yet its exports cannot be easily targeted without going against GATT's rules; its trade system is remarkably free of nonmarket restrictions or inducements. Moreover, its current attempts to search for niche agromineral subproducts, while diversifying into the Southeast Asian high-growth markets, will help put a cap on the potential for trade conflicts with the United States. As for Colombia, no major conflicts of a commercial nature are expected; however, the United States might curb Colombian exports in retaliation for political frictions (such as a perceived lack of commitment to stop the flow of illegal drugs).

This leaves us with Brazil and Mexico, the only two countries that appear to have a significant number of sectors, with sufficiently large shares and high rates of market penetration, that warrant a focused discussion. Like Argentina, they too participate with a disproportionately large share of CVD and ADD cases relative to their participation in U.S. imports. In 1985, with U.S. market shares of 5.4 percent and 2.3 percent, respectively, Mexico and Brazil participated with 9.6 percent and 8.2 percent of CVD cases, and with 2.4 percent and 7.3 percent of ADD cases. In fact, "of the 252 CVD actions initiated by the United States during the period 1980–85, 51 were taken against Mexico and Brazil alone."[4]

In the case of Mexico, the potential for future trade conflicts cuts across a broad spectrum of manufactured goods (some, such as fresh vegetables, are of agricultural origin as well). However, an increasing proportion of high-growth manufactured exports is intrafirm in nature (particularly those exports related to electric machinery and transportation); in this case, the demand for protectionism, originat-

ing in labor groups and without the support of industry, would have less resonance. More important, Mexico is dismantling its nontariff trade barriers, is rationalizing its tariff system, has joined GATT, and it is steadily moving toward integration in a North American common market compact. The expectation, therefore, is that the trade conflicts between Mexico and the United States—even though they account for a growing share of U.S. imports in a range of products—will diminish, rather than intensify, over the next five to ten years.

Brazil thus remains the only major Latin American country whose trade conflicts with the United States may intensify. As noted, it has already attracted a variety of U.S. protectionist actions against its exports. In the period 1980–1986, seventeen products suffered either antidumping or countervailing duty actions; of these, twelve were from the iron and steel product group; others were orange juice, ethanol, castor oil, iron pellets, and scissors. High rates of penetration have characterized these exports. It is no coincidence, for example, that in the period 1975–1980, export penetration of Brazilian iron and steel products into the U.S. market increased fivefold to 2.95 percent (the largest increase of all two-digit product groups in the period, except for pulp and paper) and expanded again to 4.15 percent by 1985.

The dynamics of trade conflicts between the United States and Brazil will depend, in large measure, on the behavior of Brazilian manufactured exports. As this section's brief analysis of export market shares has shown, Brazilian manufactures, particularly price-sensitive commodities, have penetrated the U.S. market at an accelerated rate in the last few years; they have also elicited considerable demand for protectionism in that market. These trade flows reflect both the competitive dynamism of the Brazilian industrial sector and government efforts to promote the expansion of nontraditional exports. The next section will briefly review not only these driving factors but also the strategic requirements for sustaining the growth of manufactured exports into the coming decade.

Brazilian Manufactured Exports: Driving Forces and the Strategic Requirements for the 1990s

What has driven the expansion of Brazilian exports in the past two decades? For both descriptive and analytical purposes, it is useful to break down that time span into two subperiods, 1965–1980 and 1980–1986, and to discuss them sequentially. It is also helpful to pinpoint some of the key variables that affect the demand and supply of exports.

The Period 1965–1980

The major force driving export growth during this period was, from the demand side, the expansion of world income. The GDP of industrial market economies grew at a cumulative rate of 3.6 percent a year, whereas that of developing countries expanded at 6.1 percent a year (see Table 5.1). The growth of income, taking place in the context of still relatively low (though growing) levels of protectionism, brought about an unprecedented growth in world trade, which Brazil, among other countries, benefited from. Whereas export and import growth were 7.1 percent and 6.7 percent, respectively, for developed market economies over this period, and 3.1 percent and 5.5 percent for the developing economies as a whole, they reached 9.4 percent and 8.2 percent in the case of Brazil (again, see Table 5.1).

The econometric evidence of the impact of world income growth on Brazilian manufactured export growth points to its importance in explaining export behavior. Most single-equation estimates have income elasticities on the order of two to three, whereas a simultaneous approach employing a disequilibrium model yielded similar short-term elasticities, but significantly higher ones for the longer term (i.e., in the range of six to seven).[5]

Increased price competitiveness was the other major factor responsible for the expansion of demand for Brazilian manufactured exports.[6] In part, it reflected the lag in the growth of real wages with respect to the growth of productivity in industry. Between 1964 and 1979, the gains in productivity (measured in terms of either GDP per capita or industrial value added per worker) were substantially above the wage gains for all categories of workers (see Table 5.10). This lag was greatest for office, semiskilled, and unskilled workers.

The growth of manufactured exports is also explained by "supply-side" variables. Supply price elasticities in most single-equation models are on the order of one; however, they are closer to two (for the short term) or three (for the longer term) in structural models. These elasticities capture the impact of profitability of export sales, as reflected in the relationship between international and domestic prices. Fiscal and credit subsidies, and a competitive exchange-rate policy, both practiced by Brazil in the 1970s, proved critical to improve that price ratio and, as such, contributed to the strong export supply response during the period.[7]

Finally, the expansion of Brazilian manufactured exports, particularly during the 1970s, can be traced to systematic and relatively successful attempts at market diversification and product differentiation (Table 5.11). In most segments of electric and nonelectric machinery and transport equipment, as well as shoes,

textiles, and fibers, the number of importing countries rose between 1971 and 1980, the number of products exported within each goods category similarly expanded, and the average price of exports (in real terms) went up during the decade (reflecting a movement toward higher value-added products).

In sum, during the period 1965–1980, Brazilian manufactures improved their competitive position as a result of a complex set of forces, including large productivity gains in industry not accompanied by changes in real wages (although wages for all categories of workers increased during the period) and a successful search for new or higher value-added product and market niches. In addition, fiscal and financial export-promoting incentives, and an effective duty drawback regime, were largely able to offset the anti-export bias inherent in the prevailing import-substitution regime. Combined with rising world demand for imports (particularly of manufactured origin), these factors enabled Brazilian exports to grow at relatively high rates during the period.[8]

The Period 1980–1986

The conditions of the 1970s contrast in a number of ways with those of the 1980s. First, incomes are not expanding as quickly: The rate of GDP growth in the 1980–1986 period slowed to 3.8 percent and 2.5 percent for the developing and industrial market economies, respectively (see Table 5.1). The pressures of adjustment stunted import growth—quite drastically, in fact, among the developing economies. They also contributed in a major way to the revival of protectionism among the developed countries. Indeed, "between 1980 and 1986 the proportion of imports to North America and the European Community affected by nontariff barriers rose by 20 percent. Approximately 20 percent of developing country exports were directly covered by such measures in 1986."[9]

Yet in spite of these barriers, the pace of developing countries' exports accelerated, mostly as a result of the sustained success of exporters of manufactures.[10] By contrast, Brazil failed in the 1980s to match the record of those high-performing developing countries. In fact, the growth of Brazilian exports slowed to 4.3 percent a year in 1980–1986—less than half the cumulative rate of 1965–1980.[11] As the growth of manufactured exports surpassed that of total exports, the share of manufactured exports in total exports increased from 37.2 percent in 1980 to 40.5 percent in 1986 (see Table 5.12). Still, when compared with the two preceding decades, particularly with the impressive gains of 1975–1980, the recent changes have been quite marginal.

What emerges from this account is the fact that, although Brazilian manufactured exports have continued to gain ground in the 1980s, they have followed a lower growth path, thus reflecting the country's inability to identify niches of high-growth opportunities, differentiate products, and gain new markets (a significant exception is the aircraft industry). The competitive position of the Brazilian economy relative to the rest of the world in the 1980s has become increasingly dependent on a narrow band of commodity-producing sectors and a few traditional labor-intensive segments (such as shoes). The products in these sectors tend on average to be more price-sensitive and less income-elastic, and they have smaller growth potential than many of the higher value-added, differentiated products, with which Brazil was unable to maintain its competitive standing.

The difficulties confronting Brazil regarding the expansion of its manufactured exports at a faster pace are related, on the one hand, to intensified competition from the developed market economies and the East Asian NICs. These countries are allocating an increasing proportion of their GDP to R&D (and other technological activities), and productive enterprises are undertaking most of these expenditures (see Table 5.13). As a result, the developed countries have been able to introduce a continuous stream of new products into world markets, and the East Asian NICs have become fast and efficient followers.

Brazil's technological efforts, on the other hand, have stagnated since 1980, after significant progress in the previous decade. More important, the industrial sector has failed to modernize—a fact that reflects the fairly dramatic contraction in the rates of investment since 1980. Indeed, the rate of investment (investment/GDP) fell from 22.5 percent in 1980 to 17.1 percent in 1987, and it reached 15.9 percent in 1988. Brazil remains competitive in certain intermediate commodities (such as petrochemicals, iron and steel, aluminum, and pulp and paper), resulting from investments undertaken during the Second National Development Plan (1974–1979); it is also competitive in a few of the more traditional labor-intensive segments. Yet, in view of Brazil's inability to migrate to higher value-added, more skill-intensive sectors, its competitive position (particularly in simpler labor-intensive products, where it must compete with other low-wage countries) have become increasingly dependent upon low and decreasing wage levels (see Table 5.14).

Prospects for the 1990s

The Brazilian development strategy during the 1980s was guided by short-term considerations. The country's approach to trade has emphasized maximization of the trade surplus in order to service its external debt. In 1986 imports were restricted to just 7.5 percent of GDP, and total merchandise trade was restricted to 18.4 percent of GDP. Such a neomercantilist posture has reinforced what was already an excessively diversified, inward-oriented, and "autarkic" productive structure, in which low levels of intra-industry specialization prevailed. In view of its narrow technical base relative to a "full" production matrix, Brazil has been unable to devote sufficient resources to areas of actual or emerging comparative advantage in order to help close the widening technological gap with some of the East Asian NICs and the more advanced countries.[12]

As a result, the critical transition that some of the East Asian economies are, in the process of completing as they increasingly orient themselves toward more skill-intensive products (many of which are niche-oriented specialities) has yet to be followed by Brazil. It is important to emphasize that Brazil made a start in this direction during the 1970s, as reflected in such indicators as RCA, product differentiation, and market diversification (see Table 5.11). But this movement was not sustained. The Brazilian industrial sector therefore continues to be characterized by an excessive inward orientation; it is also saddled by overdiversified segments supported by a narrow technical base. In short, these major constraints will limit the expansion of Brazilian manufactured exports in the coming decade.

A stylized view of current strategic choices is summarized in Table 5.15. The focus of a new industrial strategy would be the attainment of international competitiveness in areas of increasing skill intensity, greater technological content, and higher value added. But the achievement of this strategic goal would depend to a far greater degree on integration with the international market.[13] In response to the formation of new trading blocks, Brazil might consider the following two-track strategy: On the one hand, and consistent with a more liberal posture toward trade, it could expand its involvement in GATT and other international bodies, as a means of expressing concrete support for multilateralism in international relations. On the other hand, it could maintain its commitment to integration with Argentina, Uruguay, and other South American nations. Such efforts should, however, be regarded as an important (though certainly not the only) step toward a more open trade regime.

The corollary of a more open trade environment would be a greater degree of intra-industry specialization and, therefore, of intra-industry trade. A large volume of trade and a greater degree of specialization are necessary conditions for achieving the economies of scale (in technological, marketing, and servicing activities) that are critical for international competitiveness—particularly in the more income-elastic, specialized, and skill-intensive product areas.

More than being able to produce, the major strategic objective for Brazilian industry in the 1990s would be to produce near or at the international price-performance frontier while progressively moving up the skill-intensity gradient. None of the strategic choices necessary to carry out this transition are without cost, however. They involve considerable adjustment by producers to a more competitive environment as well as nonmarginal changes in the way the Brazilian government relates to the productive sector. But these reforms are necessary if Brazil is to avoid sliding into a long-term depression. Having been squeezed from above in the 1980s by developed countries and East Asian NICs, and now facing the uncomfortable possibility of being outcompeted from below, by low-wage competitors, Brazil's economic choices at the end of this decade are limited.

Conclusions

In this chapter we have examined the shifts in the competitive structure of major Latin American economies that took place in the past two decades; we have also explored their ability to penetrate world markets in the less benign environment of the 1980s. After a "lost decade," and despite the recent efforts of other countries to regain their competitive standing in international markets, Latin America is now reduced to two major players: Brazil and Mexico.

In spite of the large strides made during the 1970s, Brazil has been unable to undertake the transition to an economy capable of orienting an increasing proportion of its output to higher value-added goods, produced near or at the international price-performance frontier. It is now saddled instead with an export basket of price-sensitive commodities and traditional manufactured products that are insufficient to sustain the accelerated growth of manufactured exports.

Ultimately, Brazil's economic transition was aborted as a result of the country's inability to shift its policy regime, as a result both of the severe constraints imposed by the external debt and of the excessive focus directed to the short-term problems of

macroeconomic and fiscal management. As the current decade nears its end, Brazil still faces the same basic challenge it faced nearly ten years ago, except that its macroeconomic environment is much less forgiving now. The transition to a new development strategy will be more costly, but it is no less urgent.

Table 5.1 Latin American Newly Industrializing Countries: Selected Aspects, 1986

	GDP			Manuf. value added	Exports			Imports		
	US$ (in billions)	Growth Rates 1965–1980	Growth Rates 1980–1986	US$	US$	Growth Rates 1965–1980	Growth Rates 1980–1986	US$	Growth Rates 1965–1980	Growth Rates 1980–1986
Brazil	206.8	9.0	2.7	58.1	22.4	9.4	4.3	15.6	8.2	–5.1
Mexico	127.1	6.5	0.4	43.6	16.2	7.7	7.7	12.0	5.7	–9.2
Argentina	69.8	3.4	–0.8	18.0	6.9	4.7	1.5	4.7	1.8	–13.8
Chile	16.8	1.9	0.0	—	4.2	7.9	3.9	3.4	2.6	–9.3
Colombia	29.7	5.7	2.4	10.6	5.1	1.5	4.9	3.9	5.3	–3.0
Developing economies	2361.4	6.1	3.8	504.1	426.0	3.1	4.8	457.2	5.5	0.5
Industrial-market economies	1,0451.9	3.6	2.5	2,012.7	1,443.6	7.1	3.3	1,510.7	6.7	4.3

Source: World Development Report (1988).

Note: Absolute figures for GDP, manufacturing value added, exports, and imports are given in billions of U.S. dollars; growth figures for the periods 1965–1980 and 1980–1986 are expressed in terms of average annual growth rates.

Table 5.2 Structural Change in Latin American Economies and the United States, 1965–1985[a]

Brazil	Mexico	Argentina	Chile	Colombia	United States
5.48[b]	7.04	5.65	4.25[b]	4.89	1.41

Source: Author's own calculation, based on UN Trade Statistics.

[a]The index of structural change used for this cross-country comparison is the average of the absolute values of average annual growth rates in revealed comparative advantage at the one-digit ISIC level.

[b]Excludes mineral fuels, in view of the extremely small base in 1965.

Table 5.3 Shifts in Revealed Comparative Advantage: Brazil and Mexico, 1965–1985

Brazil Sectors with Largest RCAs		Mexico Sectors with largest RCAs	
1965	*1985*	*1965*	*1985*
Coffee	Coffee	Crude fertilizer	Petroleum
Processed oil	Animal feed	Sugar	Coffee
Metalliferous ores	Vegetable oil	Fish	Crude fertilizer
Vegetable oil	Metalliferous ores	Natural gas	Live animals
Sugar	Oil seeds	Textile fibers	Fish
Textile fibers	Sugar	Live animals	Fruits and vegetables
Wood, lumber	Footwear	Coffee	Nonferrous metals
Hides, skins	Tobacco	Cereals	Electrical machinery
Tobacco	Meat	Fruits and vegetables	Beverages
Meat	Fruits and vegetables	Nonferrous metals	Plumbing, lighting equipment

Source: Author's own calculations, based on UN Trade Statistics.

Table 5.4 Shifts in Revealed Comparative Advantage in Selected Areas of Brazil and Mexico, 1965–1985

	Brazil							Mexico						
Sector	1965	1970	1975	1980	1985	Growth 1965–1985	Growth 1980–1985	1965	1970	1975	1980	1985	Growth 1965–1985	Growth 1980–1985
Nonelectric machinery	0.10	0.19	0.41	0.74	0.48	8.3	–8.1	0.08	0.33	0.35	0.13	0.48	9.2	28.9
Electric machinery	0.06	0.11	0.34	0.41	0.28	8.0	–7.2	0.04	0.54	0.35	0.11	0.83	15.7	51.0
Transport equipment	0.05	0.05	0.32	0.70	0.46	11.3	–8.2	0.02	0.18	0.29	0.24	0.16	10.2	–7.7
Instruments, watches, and clocks	0.02	0.03	0.15	0.77	0.25	13.4	–1.6	0.10	0.11	0.36	0.09	0.28	5.4	26.7

Source: Author's own calculations, based on UN Trade Statistics.

Table 5.5 Shifts in Revealed Comparative Advantage: Argentina, Chile, and Colombia, 1965–1985

Argentina Sectors with largest RCAs		Chile Sectors with Largest RCAs		Colombia Sectors with Largest RCAs	
1965	1985	1965	1985	1965	1985
Meat	Vegetable oil	Nonfer. metals	Metal ores	Coffee	Coffee
Cereals	Oil seeds	Metal ores	Nonfer. metals	Live animals	Crude mater.
Animal feed	Cereals	Crude fertilizer	Animal feed	Petroleum	Sugar
Vegetable oil	Animal feed	Animal feed	Animal oils	Leather	Coal
Hides	Leather	Animal oils	Fruits	Tobacco	Travel goods
Live animals	Meat	Explosives	Pulp	Fruits	Fruits
Textile fiber	Textile fiber	Fruits	Wood manuf.	Sugar	Petroleum
Coal	Petrochemicals	Fert. manuf.	Fish/prep.	Zoo animals	Tobacco
Animal oils	Sugar	Fish/prep.	Crude mater.	Petrochemicals	Leather
Fruits	Fruits	Vegetable oil	Crude fertilizer	Rub. manuf.	Fish

Source: Author's own calculations, based on UN Trade Statistics.

Table 5.6 World Market Shares of Exports from Selected Latin American Countries, 1985

	Brazil	Mexico	Argentina	Chile	Colombia
Number of one-digit sectors with shares > 1%[a]	6 (2)	2 (0)	3 (0)	1 (0)	1 (0)
Number of two-digit sectors with shares > 3%[a]	13 (3)	2 (0)	5 (1)	3 (1)	1 (0)
Two-digit sectors with largest shares[b]	Coffee (16.6) Animal feed (15.3) Vegetable oil (12.0) Oil seeds (8.7) Sugar (8.3) Metallic ores (7.4) Tobacco (7.1) Footwear (6.9) Meat, preparations (5.2) Iron, steel (4.4) Fruits, vegetables (3.7) Leather (3.4) Pulp, paper (3.2)	Petroleum (5.4) Live animals (3.3)	Vegetable oil (14.3) Cereal (10.2) Oil seeds (8.2) Animal feed (6.1) Leather (4.7)	Nonferrous metals (3.8) Animal feed (3.4) Metallic ores (3.2)	Coffee (8.5)

Source: UN Trade Statistics.

[a]The number of manufacturing sectors are given in parentheses (5–8 in the one-digit ISIC classification and 51–89 in the two-digit ISIC classification).
[b]Shares in parentheses.

	Brazil	Mexico	Argentina	Chile	Colombia
Number of one-digit sectors with > 1% share[a]	8 (3)	8 (4)	2 (0)	1 (0)	2 (0)
Number of two-digit sectors with > 3% share[a]	16 (7)	20 (9)	5 (2)	4 (1)	3 (0)
Two-digit sectors with largest shares[b]	Processed oil (23.1) Coffee (18.7) Tobacco (15.3) Footwear (13) Fruits, vegetables (12.3) Sugar (10.2) Leather (6.6) Vegetable oil (6) Travel goods (5.8) Pulp, paper (4.6) Metallic ores (4.4) Iron, steel (4.2) Wood, cork manufactures (3.9) Rubber manufactures (3.6) Fish, preparations (3.2) Chemicals (3.1)	Live animals (23) Oil seeds (21) Textile fibers (18) Crude fertilizer (17.3) Petroleum (15.3) Mineral fuels (14.3) Fruits, vegetables (12.4) Fish, preparations (8.2) Plumbing, heating, lighting equipment (7.3) Petrochemicals (6.8) Electrical machinery (5.4) Plastic materials (4.2) Nonferrous metals (4.2) Wood, cork manufactures (4.2) Nonmetallic mineral manufactures (3.6) Nonelectric machinery (3.5) Beverages (3.4) Processed oil (3.2) Miscellaneous food preparations (3.1) Textile yarn (3.1)	Petrochemicals (15.9) Leather (9.3) Meat preparations (4.4) Vegetable oil (3.8) Dairy products (3.4)	Animal feed (14.5) Fruits, vegetables (5.4) Nonferrous metals (4.5) Metallic ores (3.0)	Coal (11.6) Crude materials (11) Coffee (8.4)

Source: UN Trade Statistics.

[a]The number of manufacturing sectors is given in parentheses (5–8 in the one-digit ISIC classification and 51–89 in the two-digit ISIC classification).
[b]Shares in parentheses.

Table 5.8 Export Market Share Growth of Selected Latin American Countries: World and U.S. Markets, 1965–1985

Sector	Brazil		Mexico		Argentina		Chile		Colombia	
	g1[a]	g2[a]	g1	g2	g1	g2	g1	g2	g1	g2
Food and live animals	2.0	–1.0	–1.0	–0.7	–2.0	0.6	8.7	12.0	1.5	–3.2
Beverages and tobacco	5.6	7.7	8.1	9.5	3.4	17.9	7.6	13.0	–2.4	–7.0
Crude materials, excluding fuels	3.3	–0.2	–2.3	–0.5	1.4	–12.3	2.5	–0.7	5.4	12.1
Mineral fuels	[b]	[b]	16.1	11.1	6.9	8.4	0.0	0.0	–5.4	–6.9
Animal, vegetable oil, fat	5.7	–4.7	–8.2	–9.5	3.3	1.7	4.3	–7.5	—	—
Chemicals	12.4	4.9	0.8	–2.5	–0.8	–5.1	–1.8	–6.7	3.0	2.2
Basic manufactures	11.7	10.2	1.9	1.0	10.8	8.8	–3.8	–7.1	2.3	–0.5
Machinery, transportation equipment	12.3	17.2	14.6	16.1	5.2	0.0	0.0	—	0.0	0.0
Miscellaneous manufactured goods	18.5	20.2	5.3	4.9	–3.4	3.5	0.0	0.0	8.4	14.1
Goods not classified	5.2	–21.1	–3.4	–3.8	–3.4	0.0	5.2	0.0	10.5	11.9

Source: UN Trade Statistics.

[a] g1: average annual growth rate of export market shares in world markets; g2: average annual growth rate of export market shares in the U.S. market.
[b] no market share in 1965; 0.5 in 1985.

Table 5.9 High-Share, High-Growth Latin American Export Sectors in the U.S. Market

Brazil	Mexico	Argentina	Chile	Colombia
Fruits,vegetables	Petroleum	Dairy products	Fruits, vegetables	Coal
Pulp, paper	Plastic materials	Vegetable oil	Animal feed	
Chemical elements	Leather	Petrochemicals	Metallic ores	
Leather	Wood manufactures			
Rubber manufactures	Textile yarn			
Travel goods	Nonmetallic mineral manufactures			
	Nonelectric machinery			
	Electric machinery			

Source: Author's own calculations, based on UN Trade Statistics.

Table 5.10 Changes in Real Wages in Brazilian Industry, 1964–1979[a]

Technicians	111
Office workers	57
Skilled workers	101
Semiskilled workers	76
Unskilled workers	53
GDP per capita	114
Industrial value added per worker	111

Source: J. Saboia, *Salario e Produtividade no Brasil—Um Estudode Longo Prazo*, FEA/IEI/UFRJ (August 1988), Table 15.

Table 5.11 Characteristics of Brazilian Manufactured Exports, 1971 and 1980

Commodities	Market Diversification[a]		Product Differentiation[b]		Average Real Price[c]	
	1971	1980	1971	1980	1971	1980
Telecommunication equipment	31	62	22	40	29.0	24.3
Engines	25	93	22	35	2.7	4.5
Machine tools	33	57	83	214	3.7	4.7
Off-the-road equipment	17	64	22	35	4.6	4.3
Office machinery	53	90	30	54	11.7	16.3
Computers	54	58	3	14	55.3	88.5
Mechanical comp.	30	88	33	57	4.6	5.2
Elec. mach. comp.	48	103	73	123	7.1	5.9
Electron. comp.	33	73	37	61	10.2	11.3
Compress. refrig.	34	97	35	59	12.3	4.5
Agricultural machinery	28	60	48	84	3.2	3.2
Textile machinery	35	41	41	78	9.7	7.8
Elevators, lifts	19	71	28	48	3.0	3.9
Boilers, etc.	30	90	50	124	1.2	1.4
Tools	35	84	73	122	6.0	6.7
Tractors	6	48	5	11	3.3	4.4
Railway equipment	6	27	12	21	1.6	1.6
Boats and ships	5	19	5	18	4.5[d]	8.1[d]
Aircraft	2	24	1	6	42.9	323.8
Trucks and buses	12	86	15	35	3.9	3.9
Automobiles	16	77	5	7	4.3	3.5
Auto parts	33	114	33	44	2.3	3.0
Steel products	32	76	76	121	0.3	0.4
Shoes	31	58	19	24	9.7	12.9
Textiles	25	47	41	55	3.4	5.1
Textile yarn	28	60	29	47	2.7	3.4

Source: J. Tavares de Araujo, "Mudanca Tecnologica e Competitividade das Exportacoes Brasileiras de Manufaturados," IEI/FEA/UFRJ, *Texto para Discussao n 8* (1982), Table III. Original data drawn from CACEX, *UN Statistical Yearbook*, and *International Financial Statistics*.

[a]Market diversification: number of importing countries.

[b]Product differentiation: number of eight-digit Brussels Tariff Numenclature (BTM) items in each commodity group.

[c]Average price (US$/Kg) in 1980 dollars.

[d]Average price per ship in millions of U.S. dollars.

Table 5.12 Brazil: Manufactured Exports as a Percentage of Total Exports, 1960–1986

1960	1970	1975	1980	1986
2.2	16.4	24.2	37.2	40.5

Sources: CEPAL, *Statistical Yearbook* (1979); *World Development Report* (1988).

Table 5.13 R&D Expenditures for Selected Countries (Billions of Dollars)

	1965	1970	1975	1980	1985[a]	1986[a]	% PE[b]
West Germany	1.7	2.1	2.2	2.4	2.7	2.7	61 (53)
Japan	1.5	1.9	2.0	2.2	2.8	—	67 (59)
South Korea	—[c]	0.39	0.42	0.58	1.59	1.8	60–70
Taiwan	—	—	—	—	0.99	1.06	—
Brazil	—	—	0.7	0.6	0.6	—	28

Sources: National Science Foundation; UNESCO, *Statistical Yearbook*, various issues; the World Bank.

[a]Preliminary.
[b]Percentage R&D funded by "productive enterprises" or by industry in 1985 (the numbers in parentheses refer to 1970). For Brazil, the year of reference is 1982.
[c]— indicates missing or unavailable data.

Table 5.14 Brazil: Evolution of Industrial Wages in Selected Segments, 1981–1985[a]

	1981	1982	1983	1984	1985
Textile and apparel	1.14	1.25	0.86	0.72	0.75
Plastics	1.57	1.88	1.24	1.04	1.08
Rubber products	2.13	2.57	1.88	1.58	1.64
Machinery	2.91	3.31	2.30	1.94	2.00
Electric and electronic equipment	2.07	2.42	1.71	1.44	1.49

Source: ILO Bulletin of Labor Statistics (1986).

[a]Average hourly wages, including fringe benefits (in dollars).

Table 5.15 Brazil into the 1990s: A Stylized View of Its Strategic Choices

	Approach	
Key Areas	1980s	1990s
Trade	Neomercantilist (Maximize trade surplus)	Liberal-open (Increase volume of trade)
	Bilateralism	Multilateralism
Industry	Across-the-board impsrt substitutions Ability to produce	Intra-industry specialization Ability to be a competitive producer
	Capital-intensive commodities Low-wage-based competitiveness	Specialty products Education/skill for competitiveness
Technology	Flat R&D Government-driven Dispersion of resources	Increasing R&D Industry-driven Selectivity in allocation

Notes

1. Venezuela's export performance during the period 1965–1986 was dismal (with a negative growth of 7.3 percent on a yearly basis), whereas Peru's export growth during the same period was just 1.7 percent.

2. The index of revealed comparative advantage for good (or sector) i is defined as (Xi/X)/(Xiw/Xw), where Xi is the country's exports of good i, X is the total country's exports, Xiw is the world exports of good i, and Xw is total world exports.

3. As we observed earlier, a similar phenomenon appears to have occurred in Brazil, only a half-decade later.

4. For a detailed discussion of U.S.–Latin American trade, see Leila Frischtak, "U.S. Trade Reform and Latin America Debtors," *Policy Focus*, Overseas Development Council, No. 6 (1987).

5. See H. Braga and R. Markwald, "Funcoes de Oferta e de Demanda das Exportacoes de Manufaturados no Brasil: Estimacao de um Modelo Simultaneo," *TDI*, No. 57, IPEA (July 1983).

6. In the disequilibrium model estimated by Braga and Markwald, "Funcoes de Oferta," the short-term demand price elasticity for Brazilian exports is –1.25, whereas the longer-term elasticity is –3.56.

7. One of the few explicit estimates of subsidy elasticities is found in W. Tyler's "Manufactured Export Expansion and Industrialization in Brazil," *Kieler Studien* (Tübingen), No. 134 (1976). For the period 1963–1972 they were found to be on the order of 2.4.

8. Moreover, in 1972 the government instituted a special export program (BEFIEX) for firms willing to sign a contractual commitment to export a certain volume of their output over a five-to-ten year period. These firms were then offered, *inter alia*, duty-free access to imported inputs and capital goods, to be used at their discretion—that is, in either the domestic or the international market.

9. See *World Development Report* (1988), p. 16.

10. Exports from developing countries grew by 8 4 percent between 1980 and 1986, as compared to 7.7 percent in 1965–1980. See ibid., Table 11, pp. 242–243.

11. Even though GDP grew by only 2.7 percent during this period and imports were compressed in absolute terms, the ratio of exports to GDP expanded from 7.6 to 10.8, whereas the corresponding ratio for imports decreased from 8.2 to 7.5.

12. It is noteworthy that Brazil succeeded each time it explicitly searched for profitable and specialized niches in the international market place, and each time it applied its technological resources diligently, with a high degree of selectivity. The premier example of this strategy is Embraer, which has been able to successfully break into the international market with commuter aircraft and propeller trainers. Embraer's production strategy involves a high degree of specialization, not only "horizontally" (across products) but also "vertically" (along the production chain). Thus, it has not attempted to go much beyond the present levels of domestic content (45–60 percent); engines and most avionics are imported. This strategy does not preclude

development of efficient subcontractors. Embraer's emphasis, however, is on the development (design) and assembly, through state-of-the-art methods, of aircraft that can approach the international price-performance frontier. Embraer is the sole Brazilian exporter of aircraft. Its success is reflected in constantly increasing RCAs: zero in 1965, 0.10 in 1975, 0.31 in 1980, and 0.35 in 1985.

13. A more liberal, open approach to international trade, with an emphasis on expanding both exports and imports, would be predicated upon a decrease (at least during a transition period of, say, five to ten years) of the amount of debt servicing to more manageable levels (1.5–2.0 percent of GDP). Such an approach would require a political decision among major creditor countries to move toward some form of debt relief. It would also allow Brazil to become a more open economy, concerned with expanding trade but not generating megasurpluses with its traditional partners. It would thus attract fewer retaliatory measures (e.g., ADDs and CVDs), which tend to become political impediments to an improvement in bilateral relations with the United States and other OECD countries.

chapter six

Adaptation to Changing Trade Patterns in the Global Trading System

Robert M. Stern

The United States was of preeminent influence in the global trading system in the two decades following the end of World War II; with economic recovery and expansion in Western Europe and Japan, however, the U.S. position began to erode. This erosion has continued in the past two decades as Japan, especially, has achieved prominence in world export markets for manufactured goods, and as the newly industrializing countries (NICs) of East Asia—Hong Kong, Singapore, South Korea, and Taiwan—have burst on the international scene.

These broad currents of change in the past forty years have brought with them a shift in the focus of U.S. trade policies that mirrors the evolving role of the United States in the global trading system. After World War II, the United States was instrumental in the design and implementation of the General Agreement on Tariffs and Trade (GATT), which provided the framework of rules governing international trade among the GATT member-countries. Although the United States obtained an exemption in the 1950s from its GATT obligations in connection with its domestic agricultural support programs, it nonetheless played a strong leadership role in championing the cause of freer trade in manufactures in accordance with the basic GATT principles of nondiscrimination and most-favored-nation (MFN) treatment. U.S. trade policies were guided by the belief that international political and economic strength and harmony in the noncommunist world were best fostered by an open and liberal multilateral trading environment. Although reciprocity was an integral feature of efforts by the industrialized countries to reduce tariffs and other barriers to trade in the course of the periodic multilateral negotiations convened under GATT auspices, it

is noteworthy that developing countries were granted special status that permitted them to take advantage of the concessions negotiated among the industrialized countries without themselves having to reciprocate.

As adjustment pressures have mounted in U.S. manufacturing due to increased competition (especially from Japan and the East Asian NICs, as well as in U.S. agriculture, because of excess supply conditions internationally) U.S. trade policies have become less benign. The GATT provisions, especially Article XIX, do make allowance for temporary protection in cases of unexpected surges in imports that are or threaten to be injurious to domestic workers and firms. But such protection must be imposed on a nondiscriminatory basis, and compensation of foreign producers may be required in the form of a grant of equivalent concessions in order to forestall retaliation. Rather than following GATT principles and procedures, however, the United States and other industrialized countries have found ways to bypass the GATT on a number of important occasions, thus reflecting the perceived domestic political need to find more effective ways to provide and guarantee support to vested producing interests that were ostensibly experiencing adjustment problems. Increased tariffs have not been used in these circumstances. Rather, the industrialized countries have resorted to nontariff measures, including antidumping and countervailing duties, which are condoned under GATT, and especially voluntary export restraints (VERs), which have an ambiguous status under GATT. VERs are quantitative restrictions on imports that are administered by the exporting countries. They have a built-in feature of compensation inasmuch as the profits arising from the restriction of trade can be captured by exporting interests. This feature serves to blunt foreign opposition to the restrictive impact involved.

U.S. trade actions have by no means been confined to import restraints. It is widely believed, in both official and private circles in the United States, that foreign markets are much more closed than U.S. markets, and that foreign governments employ a panoply of measures that give their producers an "unfair" advantage over U.S. producers. As a consequence, U.S. authorities have been empowered by legislation to investigate foreign market barriers and policies and to threaten and actually impose punitive import reductions unless the foreign government agrees to relax or eliminate the barriers and change its policies. Special subsidies for U.S. exports of agricultural products have also been introduced. Recent U.S. trade policy has thus taken on a unilateral and aggressive stance, which is in sharp contrast to the character and direction of policy in the 1950s and

1960s, when the United States played the leadership role in fostering an open and liberal multilateral trading system based on GATT principles.

Although certain changes in trade policy in the United States and elsewhere can be considered to have weakened the multilateral system in important ways, the system has nonetheless continued to provide the general framework for the conduct of trade and for multilateral negotiations to be convened periodically. These negotiations have focused on further liberalization of trade and the design of agreements to monitor existing nontariff restrictions and prevent new restrictions from being introduced. The ongoing Uruguay Round of multilateral trade negotiations provides an opportunity to review the past accomplishments and unresolved problems of the GATT system. Among the most important issues in the negotiations is whether and how the mutual interests of the major industrialized countries and the NICs can be accommodated in a multilateral setting. At the same time, it is important to ask if these interests can perhaps be better served by means of bilateral and plurilateral trading arrangements that are alternatives to the GATT, even though they preserve the most important principles of the GATT.

In the second section of this chapter, we present some empirical data relating to major changes in the geographic distribution and commodity composition of the main components of world trade between 1973 and 1986. These changes provide the basis for our treatment in the third through fifth sections of the important policy responses to changing trade patterns that have been undertaken nationally in the major industrialized countries and the NICs, multilaterally under GATT auspices in the Tokyo and Uruguay Rounds, and bilaterally/plurilaterally by the major industrialized and developing countries. The sixth section concludes the chapter, with some remarks on the future of the GATT system.

Changes in World Trading Patterns, 1973–1986

For a useful perspective on the discussion to follow, the reader may wish to consider some of the salient developments in world trading patterns that have occurred since the 1970s. In Tables 6.1, 6.2, and 6.3, we show the exports, imports, and net balances classified by major commodity groups and geographic areas for the United States, Japan, the European Community (EC), and the European Free Trade Association (EFTA), combined for the years 1973 and 1986. These data are drawn from GATT sources. The initial year predates the first

oil shock of 1973–1974, and the terminal year is the most recent in terms of data comparability. The absolute amounts of trade are measured in billions of current U.S. dollars. The percentage distribution by geographic area, given in parentheses, is to be read across the relevant rows, whereas the percentage distribution by commodity group is to be read down the relevant columns.

Let us first consider the changes in the U.S. trading position shown in Table 6.1. The following observations can be made:

1. The United States had a position of near overall trade balance in 1973 and an overall trade deficit of $176.8 billion in 1986. The U.S. trade deficit in 1986, by geographic area, was $62.5 billion with Japan, $34.1 billion with Western Europe, and $55.3 billion with the developing countries (including the oil exporters).

2. Although the United States had an export surplus of $8.8 billion in primary products with Japan in 1986, it had bilateral deficits with Japan of $64.9 billion in engineering products and $4.1 billion in consumer goods.

3. U.S. trade in primary products with Western Europe in 1986 was roughly balanced, whereas there were deficits of $7.8 billion in semi-manufactures, $14.9 billion in engineering products, and $10.6 billion in consumer goods.

4. Oil imports accounted for a substantial part of the 1986 U.S. deficit of $29.4 billion in primary products with the developing countries. Although U.S. trade in semi-manufactures and engineering products with the developing countries was more or less balanced during that year, the developing countries were evidently major outlets for U.S. exports of these products, accounting for about one-third of the total. The United States had a deficit of $28.7 billion with the developing countries in its trade in consumer goods (textiles, clothing, etc.).

5. Most of the U.S. trade in manufactures with the developing countries that is shown in Table 6.1 is with the NICs in Latin America (i.e., Mexico, Brazil, and Argentina) and in East Asia (i.e., Hong Kong, Singapore, South Korea, and Taiwan). Branson (1987) has analyzed this pattern of trade in more detail; as he has noted, it appears that, "on balance, the U.S. exports manufactures to Latin America, the Latin American NICs sell nonmanufactures (especially Mexican oil) in the world market, the Far Eastern NICs buy nonmanufactures in the world market and sell manufactures to the United States" (p. 55).

The main features of Japan's trading position in 1973 and 1986, shown in Table 6.2, can be summarized as follows:

1. Compared to a position of near balance in 1973, Japan had an overall trade surplus of $89.7 billion in 1986. It had a bilateral surplus of $54.8 with the United States, $22.4 billion with Western Europe, and $4.2 billion with the developing countries.

2. Japan's limited endowment of food, materials, and mineral resources (oil especially) is reflected in its net imports of primary products from the United States ($10.7 billion) and the developing countries ($41.6 billion). Primary products constituted nearly two-thirds of Japan's imports in 1986.

3. Japan's concentration on exports of engineering products and, to a lesser extent, on semi-manufactures is clearly evident. The United States and the developing countries together accounted for about two-thirds of these exports.

4. Japan's imports of manufactures were about one-third of total imports in 1986. Its imports of engineering products and consumer goods are remarkably low, both in absolute terms and in comparison to the United States and Western Europe. In 1987–1988, however, these imports increased quite substantially.

5. According to the more disaggregated analysis in Branson (1987), Japan's trade in manufactures with the NICs was concentrated primarily in East Asia.

The following are the main features of the trading position of the EC and EFTA combined, as indicated in Table 6.3:

1. Netting out intra-EC and EFTA trade, there was an overall surplus of $4.4 billion in 1986 compared to a deficit of $13.7 billion in 1973. Europe's bilateral surplus in 1986 was $19.8 billion with the United States and $2.0 billion with the developing countries, and there was a bilateral deficit of $27.5 billion with Japan.

2. Europe's net imports of food, materials, and oil are reflected in its primary product trade with the United States. Europe had a deficit of $29.4 billion in its trade in engineering products with Japan in 1986.

4. Europe was a net exporter of semi-manufactures and engineering products to the developing countries and a net importer of consumer goods in 1986.

5. According to the more disaggregated analysis in Branson (1987), Europe's trade in manufactures was in general much less concentrated with the NICs than U.S. and Japanese trade in manufactures.

The patterns of trade recorded in Tables 6.1, 6.2, and 6.3 reflect both long-term and short-term influences. The long-term influences include changes in national factor endowments, technology, and

government policies that serve to shape the comparative advantage of each country or region. The short-term influences, which include changes in real exchange rates and national income, derive especially from changes in government macroeconomic policies and will have a greater impact on the levels of trade than on the composition of trade.

If, for example, we wished to explain the pattern of trade in primary products—food, materials, and minerals (including oil)—and semi-manufactures, the main determinants would be intercountry differences in the abundance of land, other natural resources, and the associated investments in physical capital together with government incentives that are designed to protect or promote production and trade in particular sectors. Trade in such semi-manufactures as chemicals and in many engineering products especially reflects the services of the most highly educated, technically trained, and experienced members of the labor force and business management combined with the services of the physical plant and equipment that embody the most recent technological innovations. Scale economies and some elements of market power may also be present in these industries. Finally, trade in such engineering products as automobiles and household appliances and in such nondurable goods as textiles and clothing may reflect the fact that these products can now be produced with relatively standardized production methods. It has accordingly become cheaper to produce these products in countries that are abundant in relatively unskilled labor and thus have lower wage costs.

The foregoing considerations may help explain why the United States has a comparative advantage in such primary products as grains, certain livestock products, tobacco, and cotton, and a comparative disadvantage in oil and metals. By the same token, Western Europe, Japan, and some developing countries may be net importers of a variety of primary products, although restrictive government policies may be used to protect domestic producers in many instances. It is also the case that the United States, Japan, and Western Europe have a comparative advantage in a variety of chemicals and engineering products that embody relatively large inputs of human capital and advanced technology. Finally, the relatively labor-abundant East Asian NICs are presently low-cost sources of many types of consumer goods and related products that can be produced with fairly standardized technology.

International specialization and trade are shaped by the long-run influences just mentioned; the significance of short-term factors must be recognized as well. In particular, changes in government

macroeconomic policies can result in differential movements in real exchange rates and in national income and expenditure, and thereby lead to sizable and persistent intercountry trade and current account imbalances. These short-term influences are clearly evident in the trade deficits recorded in Table 6.1 for the United States vis-à-vis Japan, Western Europe, the developing countries, and overall.

In assessing a country's trade performance, it is thus necessary to distinguish changes due to short-term influences that may be driven especially by macroeconomic forces from the long-run or structural changes in comparative advantage that may be occurring. These distinctions are especially important given that the long-run adjustment pressures to which workers and firms in import-competing sectors in the United States have been subjected may have been intensified due to the rapid and sizable appreciation of the U.S. dollar that took place in the first half of the 1980s. Also, the large bilateral trade imbalances that the United States has been running, especially with Japan, are attributable to an important extent to differences in national macroeconomic policies rather than to Japan's sectoral production and trade policies.[1]

Having highlighted the changing trade patterns of the major industrialized and developing countries since the 1970s, we turn next to a discussion of the important national, multilateral, and bilateral/plurilateral policy responses that have been undertaken in an effort to expedite, adjust to, or thwart these changing patterns.

National Policy Responses to Changing Trade Patterns

The United States and Other Industrialized Countries

As noted, a number of important nontariff actions have been taken by the United States and other major industrialized countries since the 1970s for the purpose of limiting imports. The most prominent of these actions include a host of discretionary policy measures and voluntary export restraints (VERs) that have been invoked or negotiated in accordance with existing legislative and/or executive authority and mandates.

In the case of the United States, for example, the chief discretionary policies include (1) resort to import relief laws that provide the authority for safeguard measures to provide temporary relief from imports and investigations of market disruption due to imports from communist nations; (2) actions under the laws against unfair trade practices that provide for antidumping duties on imports that are sold at "less than fair value," countervailing duties to offset foreign subsidies, resolution of complaints of unfair methods

of competition such as patent infringement, and resolution of complaints concerning violations of U.S. rights under trade agreements, including foreign government practices that inhibit U.S. trade; (3) actions under the law to prevent imports from undermining domestic agricultural support programs; and (4) actions to regulate imports that may impair national security.

These various measures, which are rooted in U.S. domestic law, presumably conform to the Articles of Agreement of the GATT. But since the investigations are carried out by U.S. government agencies—in particular, by the Department of Commerce, the International Trade Commission, and the U.S. Trade Representative—there is no guarantee that the decisions reached will be impartial and equitable in all cases. In fact, the very existence of these different avenues for complaints as well as the process of investigation itself may well constitute a form of harassment that could at times be rather costly to foreign producing interests.

In addition to the actions based on U.S. trade laws and regulations, import relief may take the form of a VER that will specify the permissible market shares or quantities of goods that the exporting countries will be allowed in a given time period. A VER may be sought by domestic producing interests in cases where the process of administering the trade laws has not yielded or is unlikely to yield the desired outcome. Since the government and/or the firms in the exporting country will normally capture at least part of the excess profits that arise due to such restrictions, there is an element of compensation present in a VER arrangement that makes it more palatable to foreign suppliers than many other forms of administered protection.

The other major industrialized countries have domestic trade laws and administrative procedures that share many of the features just described. Of course, the precise mechanisms and the selection of policies vary depending upon national political and legal institutions and the structure and influence of interest groups. This is the case for the implementation of VERs as well.

Because many of the discretionary trade policy measures are framed in terms of administrative guidelines and practices, which may vary by type of product, industry, and country, it is difficult to determine precisely how prevalent these barriers to trade are, how they have changed, and especially what impact they may have on international trade and economic welfare. One way to assess the prevalence of existing nontariff barriers is provided by the inventory of these measures that has been compiled by the United Nations Conference on Trade and Development (UNCTAD). As this

inventory classifies the NTBs by commodity group, calculations can be made of the frequency of occurrence of NTBs using as a measure the value of imports in a given commodity group that are subject to any identified NTB. In turn, trade-weighted frequencies can be determined for given commodity groups. These frequencies can be expressed as percentages of trade covered by NTBs. Thus, a designation of zero means that there are no NTBs present, whereas 100 percent means that all trade in a given commodity category is subject to one or more NTBs.

Some information on the NTB coverage for sixteen industrialized countries is given in Table 6.4.[2] These coverage data were calculated using the value of own-country (1981) imports that were subject to any (1983) NTB at the detailed tariff-line level and then aggregated across product categories.[3] The first line in each row of Table 6.4 refers to the coverage ratios weighted by imports from developing countries, and the second line refers to weighting based on imports from industrialized countries. Omitting fuels, the coverage for all industrial country markets suggests that more than $100 billion of 1981 trade in agricultural products and manufactures was subject to NTBs as of 1983. With respect to individual countries, column (2) of Table 6.4 indicates that Belgium-Luxembourg, France, Australia, and Switzerland had the highest coverage ratios. It is noteworthy that the coverage ratios are considerably higher for agricultural products than for manufactures. Among manufactures, textile (including clothing), iron and steel, and vehicles have relatively high coverage ratios. Comparisons of the first and second line of each row show that the NTB coverage ratios for agricultural products tend to be higher when weighted by industrialized country imports, whereas the coverage ratios for manufactures tend to be higher when weighted by imports from developing countries.

It may be of interest to consider VERs separately in view of their importance. A detailed listing of the various restraint arrangements in operation as of September 1987 can be found in GATT (1987: 55–58, 99–108). According to this source:

> Product categories most heavily affected by these arrangements included steel and steel products (38), textiles—arrangements concluded outside of MFA [Multi-Fibre Arrangement] IV (28), agriculture and food products (21), automobiles and transport equipment (14), electronic products (11), footwear (8) and machine tools (7). Sixty-nine protect the market of the European Community or one of its member States, 48 protect the U.S. market, and 7 protect the Canadian market. The arrangements limit mainly exports from

Japan (25 arrangements), Republic of Korea (24), the European Communities (7) and Taiwan (6) (p. 55).[4]

It is unfortunately rather difficult to track movements in protectionism over time, because the existing data do not readily extend to years prior to 1981. Nonetheless, the evidence cited in Nogues, Olechowski, and Winters (1985) and in GATT (1987) suggests that there has been a noticeable increase in the extent of NTBs since 1981.[5]

Finally, it is of interest to ask how important existing NTBs may be in terms of their economic impact on production, trade, and employment by sector and overall in the major industrialized and developing countries. One way to assess this impact is to represent the NTBs in terms of tariff or subsidy equivalents by estimating the percentage changes in prices in the importing countries that result from the NTBs, with appropriate weighting for trade coverage. Such estimates have been constructed by Deardorff and Stern (1988) for eighteen major industrialized countries and adapted for use in their Michigan Model of World Production and Trade (1986). Using these industrialized country NTB estimates together with data on existing tariffs, Deardorff and Stern have calculated the sectoral trade and employment effects of the assumed removal of these NTBs and tariffs for the eighteen industrialized and sixteen developing countries included in the Michigan Model. Their results are summarized in the aggregate by country in Table 6.5. The principal findings are as follows:

1. Based on benchmark levels for 1976, exports would rise by more than $35 billion—a 4.7 percent increase. U.S. exports and imports would rise by $4.4 billion. The comparatively small changes noted in the trade of the developing countries would especially reflect the responses to the appreciation of their currencies that would be experienced in the context of the extensive and concerted liberalization by the industrialized countries that is being assumed.

2. The gross change in employment for the United States would be 184,000 workers, or 0.21 percent of the 1976 labor force. This is a measure of the number of workers who would have to change jobs as the result of the assumed liberalization. The results for the United States are clearly on the low side in comparison to the other industrialized countries, for which the changes range from less than 1 percent to more than 4 percent of 1976 employment, and the developing countries, for which the changes range from less than 1 percent up to 12.3 percent.

3. The terms of trade for the United States would improve marginally, and somewhat larger improvements would be recorded especially for Australia, Denmark, Ireland, the Netherlands, and New Zealand, reflecting the importance of these countries as agricultural exporters. Terms-of-trade improvements would also be evident for many of the developing countries.

4. The U.S. dollar would depreciate by 0.7 percent, the Japanese yen by 3.0 percent, and the Swiss franc by 1.6 percent. Some of the currencies of the other industrialized countries would appreciate, and the currencies of *all* the developing countries would appreciate, ranging from 0.3 percent for Brazil to 16.6 percent for Hong Kong.

5. Import and therefore consumer prices would fall in the United States by 0.1 percent. Prices would fall by somewhat larger amounts in several other industrialized countries, and they would increase in Japan and Switzerland in apparent response to the assumed removal of agricultural production subsidies. Prices would decline in all the developing countries.

The detailed sectoral results for the United States, which underlie Table 6.5 and are given in Deardorff and Stern (1988), indicate the largest positive net employment changes in U.S. agriculture as well as net increases and declines in employment of small magnitude across all other sectors. The details for the other industrialized countries and the developing countries suggest that the assumed removal of existing tariffs and NTBs might result in substantial labor market adjustments in a number of important sectors.

The computational results summarized in Table 6.5 are based on the assumption that the NICs neither reduce nor remove their existing tariffs and NTBs. As noted above, reduction or removal are options that have been available to them in the Tokyo Round and earlier GATT multilateral negotiations. However, the major NICs in particular are under increasing pressure in the current Uruguay Round negotiations to give up their special and differential treatment and to graduate to the status in which they assume full obligations under the GATT and undertake reductions in their trade barriers as well. In this connection, Deardorff and Stern (1988) have shown that a considerable overall expansion of trade would occur if both the major industrialized countries and the NICs were able to liberalize together. We shall return to this issue in our discussion below of the issues in the Uruguay Round negotiations.

The Asian and Latin American NICs

It is evident from our earlier discussion that the NICs have come to play a major role in the global trading system not only as suppliers

of manufactures (especially consumer goods) to the industrialized countries but also as importers of semi-manufactures and engineering products from the industrialized countries. The East Asian NICs, which have registered the most striking domestic economic performance and increases in exports to the United States in particular since the 1970s, offer an interesting contrast to the experiences of the Latin American NICs—namely, Argentina, Brazil, and Mexico. This contrast is evident in Table 6.6, which records rates of growth of gross domestic product (GDP) and per capita GDP for the periods 1963–1973, 1973–1985, and 1963–1985. The differences between the Asian and Latin American experiences are most notable for 1973–1985.

The rapid export expansion of the East Asian NICs is shown in Table 6.7, where the largest increases are recorded for Korea (from 2.0 percent of the total manufactures exports of the twelve countries listed in 1963 to 23.7 percent in 1984) and Taiwan (whose share increased from 6.4 percent in 1963 to 24.6 percent in 1984). The shares of manufactures exports of the Southeast Asian countries increased from 1963 to 1984, whereas India's share in the exports of both nonfuel primary products and manufactures declined noticeably. Among the Latin American NICs, Brazil's export share of manufactures increased from 2.1 percent in 1963 to 10.2 percent in 1984.

Although exports are obviously intercorrelated with changes in GDP, and given the many other determinants of a nation's rate of economic growth, there is nonetheless a considerable body of both cross-section and time-series empirical evidence (see Balassa, 1988: S277, S279–S280) to support the conclusion that intercountry differences in export expansion are positively related to differences in rates of aggregate growth. Nonetheless, although the facts speak for themselves, they leave open the obvious questions of how the East Asian NICs in particular have been able to achieve such economic success and whether they can serve as models for other developing countries.

The economic success of the East Asian NICs appears to have derived from a number of interrelated elements, which Bradford (1987: 314) has summarized as follows: "The evidence suggests . . . a supply-push development model with government playing a key role in stimulating capital formation through macropolicies and in accelerating structural change through sectoral strategies affecting the output and export mix." World demand conditions are obviously important as well, to the extent that they define the appropriate price signals and the associated opportunities for access to foreign markets. But what seems most crucial is "getting the policies right"

and not merely "getting the prices right." International trade, then, is best viewed in this context as a "handmaiden of growth" rather than as an "engine of growth" in its own right.

Kuznets (1988: S31) describes the important links between export-oriented government policies and economic behavior in the following way:

> Economic behavior is better in export-oriented than in import-substitution regimes because firms must compete with others in international markets rather than rely on the protection of sheltered domestic markets. Growth also occurs through the expansion of more efficient producers rather than the more protected ones. Export-promotion strategies were initiated in Taiwan and Korea by devaluation, liberalizing imports, and reducing the web of controls needed to protect domestic producers. In each case there were benefits from avoiding the restrictions required by import-substitution policies that had distorted relative prices and from avoiding the foreign-exchange crises (associated with import substitution) that had led to stop-go macroeconomic policies. Finally, though the success of the export-promotion strategies was not assured at first and the new policies faced opposition from import-substitution interests, "success breeds success." When the new trade regimes eventually succeeded, they received the public support that has preserved them to this day.

It is interesting to consider both whether the East Asian NICs will be able to continue their rapid rates of expansion of output and exports and what the outlook is for the emerging NICs of Southeast Asia and the major Latin American NICs. The evolution of the industrial structure in such nations as Korea and Taiwan has been fostered by government policies that have provided stable, sectorally neutral incentives and effectively functioning domestic factor markets. Access to industrialized country markets, particularly the United States, has been crucial in this process. The maintenance of open and expanding markets in the major importing countries is therefore vitally important to the established NICs and the emerging NICs insofar as it encourages their adoption of more effective domestic policies. Furthermore, if the NICs can continue to expand their domestic output and exports, they will absorb larger and more varied imports of semi-manufactures and engineering products from the industrialized countries especially and from one another as well.

The data presented in Tables 6.1, 6.2, and 6.3 reinforce the point that the NICs already account for a sizable proportion of industrialized country exports of manufactures. It is important to note in this connection that, since the early 1980s, the Latin American NICs, especially, have experienced serious difficulties in

servicing their foreign debts. In order to cope with these difficulties, they have instituted substantial reductions in public expenditures; as a consequence, however, there have been significant declines in their aggregate real output and imports. Since the United States has been a traditionally large exporter of manufactures to the Latin American NICs, the efforts of these countries to deal with their debt problems have had a detrimental impact on the U.S. trading position. It thus seems obvious that the industrialized countries stand to benefit from increased exports to the NICs just as the NICs will benefit from improved access to the industrialized country markets. World economic welfare will accordingly be enhanced by this increased interdependence and by the greater specialization and trade that will take place.

On the basis of our earlier discussion of protectionism in the United States and other industrialized countries, the outlook for the NICs unfortunately appears to be somewhat ambiguous. It is possible, however, that the situation could be clarified and improved by means of multilateral negotiations under GATT auspices. To help in assessing this possibility, we turn next to a consideration of what was accomplished in the Tokyo Round from the standpoint of the major industrialized countries and the NICs, and then to a consideration of the prospects in the current Uruguay Round for an accommodation of interests among these groups of countries.

Multilateral Responses to Changing Trade Patterns and Policies

Evaluation of the Tokyo Round Negotiations

The Tokyo Round negotiations were convened under GATT auspices in 1973 and concluded in 1979. They resulted in an agreement for across-the-board reductions in tariffs and a series of agreements (codes) covering a variety of nontariff measures.

Average pre–Tokyo Round (1972) tariffs on industrial products appear in column (1) of Table 6.8 for the eighteen chief participants in the Tokyo Round negotiations. The average rates negotiated, called the offer rates, are in column (2). Column (3) records the average depth of cut by country. A breakdown by major industrial sector and country is given for the pre–Tokyo Round tariffs and for the offer rates in Deardorff and Stern (1986: 50–51).

A great deal of attention was devoted in the Tokyo Round to the discussion and formulation of codes and agreements concerning the use by signatory nations of nontariff measures of trade intervention. The principal items covered were as follows:

1. *Antidumping*: This code was aimed at establishing uniformity among and discipline over the antidumping practices of the signatory nations in order to reduce the trade-impeding effects of antidumping laws and procedures.
2. *Subsidies and countervailing duties*: This code states the general principles that (a) subsidies should not harm the trading interests of other countries, and (b) that countervailing duties, to offset foreign subsidies, should not impede trade unjustifiably. The United States agreed in principle to a test of "material injury" before imposing countervailing duties; however, it has not done so in a number of investigations concerning cases in which developing countries did not accept the commitments of this code.
3. *Product standards*: Under this code, countries agreed generally, when introducing new standards, to follow international standards for health, safety, consumer and environmental protection, and so on, and to refrain from establishing standards that impede trade.
4. *Government procurement*: This code is designed to open up public procurement to competitive bidding by both domestic and foreign firms.
5. *Customs valuation*: This code sets up consistent valuation practices for trade based on a "transaction" price. The point is to limit arbitrary uplifts in valuing imports for duty purposes and to reduce the uncertainty that traders face regarding the duty they will have to pay.
6. *Import licensing procedures*: This code encourages governments to simplify the administration of import licensing and to minimize practices that discriminate against foreign suppliers.

Aside from these nontariff codes, the Tokyo Round agreement contains provisions for reform of the GATT framework, minor reductions in NTBs on specific products, and removal of certain trade impediments on civil aircraft.

There was an unsuccessful attempt in the Tokyo Round to draft a safeguards code covering policies to deal with market disruption due to sudden upsurges in imports. The European Community in particular wanted the authority to apply safeguards selectively by product and supplying country, whereas the United States favored the nondiscriminatory application of safeguards measures. Discussions regarding this code are being continued in the Uruguay Round. The lack of agreement on a safeguards code was not the only failure in

the Tokyo Round, however, for this Round also left intact practically all of the important nontariff restrictions governing trade in agricultural products and foodstuffs, textiles and clothing, footwear, iron and steel products, consumer electronic products, and shipbuilding.

The tariff reductions negotiated in the Tokyo Round were to be implemented over a seven-year period beginning in 1980. In order to analyze the economic effects that might be expected, Deardorff and Stern (1986) used the Michigan Model mentioned above for simulation purposes. Assuming that the tariff reductions were to be carried out all at once, their calculations (pp. 53–59) indicate that exports of the major trading countries covered by the model would rise by about $13 billion, which is 1.6 percent of the 1976 base level. Practically all of this increase is accounted for by the industrialized countries. The gross change in employment, which measures the number of workers who would have to change jobs, was well under 1 percent of 1976 employment in all the industrialized countries. Changes in the terms of trade, exchange rates, and domestic prices were all shown to be comparatively small. Since, as mentioned, the tariff reductions were to be phased in over seven years' time, the actual effects in any one year would be extremely small.

The smallness of these results is not surprising if we consider that the Tokyo Round tariff reductions were themselves quite small, inasmuch as average tariffs were to be cut from approximately 8 percent to 6 percent. Granting this, domestic prices might not even fall by the full extent of the tariff reductions if changes in world prices and exchange rates were taken into account. Furthermore, the impacts would be diminished because the effects of the tariff reductions on the prices of outputs and inputs would be offsetting. Since, as noted, most NTBs remained unaffected by the Tokyo Round negotiations, the Round may have been of limited significance especially for the developing countries, whose exports were (and continue to be) constrained by the existing nontariff restrictions.

The Tokyo Round codes noted above constitute a major accomplishment in international commercial diplomacy insofar as they explicitly extend trade discipline to, or define more precisely existing discipline and rules for, specific nontariff intervention measures. The codes are essentially exercises in international rule-making and have as their primary objectives the reduction of trade barriers and the enhancement of certainty, transparency, and, ideally, restraint by governments in the use of nontariff measures. Because the codes relate to the clarification and improvement of rules and procedures, it is difficult to evaluate their commercial

impact in quantitative terms. Nonetheless, as there has been nearly a decade of experience in the operation of most of the codes, some qualitative assessment of their usefulness is possible.

Each of the codes has been reviewed in some detail by Stern, Jackson, and Hoekman (1988). They conclude that the customs valuation and standards codes especially, and to some extent the antidumping and government procurement codes, have resulted in greater harmonization and consistency of national regulations. As a consequence of the increased predictability and greater uniformity of national practices, transaction costs of doing business may have been reduced to an important extent. Moreover, the regular meetings of the code committees under GATT auspices, exchange of information, and resolution of many disputes by means of consultation have created a climate of cooperation among the code participants.

The codes that are operating least well are those relating to subsidies, trade in civil aircraft, and import licensing. Difficulties stem especially from the contentious nature of the policies involved in these codes—policies that impinge directly on national sovereignty and the government pursuit of domestic economic and political objectives. The subsidies code that was negotiated had some notable ambiguities concerning, for instance, just what subsidies were to be covered, how a subsidy was to be defined, how agricultural subsidies especially should be treated, and what exemptions were appropriate for developing countries. The effectiveness of the civil aircraft codes has been limited because it has not curtailed the use of subsidies and the political marketing of aircraft. The code governing import licensing has not be accepted by most developing countries because they are not willing to give up this form of protection. Also, the licensing code does not deal with export restraints that, as noted, have become a major form of protection used by the industrialized countries.

The Tokyo Round codes are intended to reflect the basic GATT principles of nondiscrimination, the desirability of transparency in the choice of intervention measures, the sanctioning of actions against unfair trade, and surveillance and consultation regarding restrictive actions. At the same time, although they are intended to be applied on a nondiscriminatory basis, the codes have been structured so as to bind only the signatories. Furthermore, the United States in particular has decided to interpret and apply its obligations under the subsidies, standards, and procurement codes only to other signatory nations as a means of exerting leverage on nonsignatory, particularly developing, nations to alter those policies that may not be in conformance with the codes.

All of the industrialized countries have signed most of the codes, but the participation of developing countries has been more limited. Much would be gained if all the major NICs could be induced to become parties especially to the subsidies, customs valuation, and licensing codes. The advantage of greater participation by these countries would be to enhance their influence on and improve the operation and effectiveness of particular codes. If more countries were to sign certain codes, they would presumably have to adapt their domestic policies to conform to the code obligations. Such conformity would be beneficial to them if it resulted in improved allocative efficiency, even though some costs might be involved given the domestic institutional constraints that would have to be overcome. Expanded developing country membership in the existing codes and the possible negotiation of new codes are among the issues to be addressed in the Uruguay Round negotiations, to which we now turn.

Issues in the Uruguay Round Negotiations

The agenda for the Uruguay Round negotiations was established on the occasion of the ministerial meeting that was convened in Punta del Este (Uruguay) September 15–20, 1986. Part I of the ministerial declaration included the establishment of negotiating groups to deal with the following issues relating to trade in goods: tariffs; nontariff measures; natural resource–based products; textiles and clothing; agriculture; tropical products; GATT Articles; MTN agreements and arrangements; safeguards; subsidies and countervailing measures; trade-related aspects of intellectual property rights, including trade in counterfeit goods; trade-related investment measures; dispute settlement; and functioning of the GATT system. Part II of the declaration established a separate negotiating group on trade in services.

Several of the issues on the Uruguay Round agenda appear to be fairly uncontroversial. These include tariff reductions, natural resource products, tropical products, improving the operation of the Tokyo Round codes, improving dispute settlement procedures, and improving the function of the GATT system. But other issues are definitely more controversial, especially nontariff measures, textiles and clothing, safeguards, subsidies, intellectual property rights, trade-related investment measures, and services.

As already noted, the developing countries have heretofore not been required to make reciprocal concessions in the GATT negotiations. However, in view of the increased role that the major NICs are now playing, especially as exporters of manufactured goods,

there are bound to be pressures exerted on them to accept more fully the obligations under GATT. What this might initially entail is that the major NICs agree to graduate to the status of full membership in the GATT by giving up their "special and differential treatment" as developing countries. If they undertook commitments to bind their existing levels of protection and, further, if they offered to reduce this protection, their efforts would help to set the stage for potentially fruitful negotiations with the industrialized countries.

It is interesting in this light to consider whether there are possible tradeoffs or linkages between issues that would be mutually beneficial to the major industrialized countries and the NICs.[6] The issue of safeguards is crucially important to the NICs, especially in light of the increasing use of VERs by the United States and other industrialized countries to limit imports of various types of manufactured goods. The sticking point in the Tokyo Round negotiations was whether safeguards restrictions should be selective by product and supplying country, which was the EC position, or be nondiscriminatory, which was the U.S. position. Since the implementation of VERs has been selective in practice, it is conceivable that a safeguards agreement could be negotiated that would bridge the EC and U.S. positions.

In order to reach agreement on safeguards, it would be necessary for the industrialized countries to agree to discontinue existing VERs, including the Multi-Fibre Arrangement (MFA). In this event, the industrialized countries would be permitted to use temporary and degressive protection, subject to the demonstration of material injury. Market access for NIC manufactures would thus be more assured than under present circumstances. As for the major NICs, they might offer, as a quid pro quo, to bind their tariffs under GATT; they might also agree to reduce existing protection in order to appeal to the industrialized countries.

It is possible, too, that a services agreement might provide a basis for linkage with a safeguards agreement, even though services have been placed on a separate track in the Uruguay Round agenda.[7] The attainment of a services agreement is an important objective of the United States in the Uruguay Round, and this objective appears to be shared by both the EC and Japan. If a services agreement were to be negotiated, the participation of the major NICs could be premised on reaching an acceptable agreement on safeguards and related issues, involving, as mentioned, the discontinuance of VERs—including the MFA. The fact that some countries benefit from the rents provided by the VER arrangements would have to be considered in an effort to reach an acceptable agreement.

Possible linkages aside from those already mentioned could be pursued in the Uruguay Round. It is in the mutual interests of the United States, EC, and Japan to agree to the liberalization of nontariff restrictions on trade in selected manufactures, to reductions in agricultural production subsidies and export subsidies, and to clarification of and more effective rules governing subsidies on manufactures. These issues are probably of most direct concern to the industrialized countries themselves, although the interests of certain developing countries would definitely be served by any agreements that might be reached. There are obviously many cross-currents in the Uruguay Round negotiations, and tradeoffs and linkages among the various issues are likely to be pursued by the major participating countries and blocs as the negotiations reach their climax.

Bilateral and Plurilateral Responses to Changing Trade Patterns

Multilateral negotiations under GATT auspices are inherently time-consuming. It is difficult to obtain consensus among the GATT members on the agenda items, and it is even more difficult to conclude negotiations successfully. Also time-consuming, and often frustrating, is the GATT process of investigating and resolving disputes, especially when the governments involved perceive that their interests are ill served in a multilateral setting. Under these circumstances, they are strongly tempted to consider seriously bilateral and/or plurilateral approaches to negotiations for trade liberalization and the resolution of disputes.

As Baldwin (1987: 39) has pointed out, an obvious advantage of the bilateral/plurilateral approaches is that it is easier and quicker both to agree on a negotiating agenda and to complete negotiations. Moreover, the participating countries are better able to choose issues directly related to their mutual trading interests. Furthermore, like-minded countries are able to agree on a more extensive package of mutual liberalization than is feasible in the larger GATT setting in which the interests of many countries are involved. Finally, bilateral negotiations may be especially appealing in addressing issues of "unfair" trade when a country perceives, rightly or wrongly, that it is being injured by some foreign trade practice. If action is taken bilaterally, pressure may be exerted directly on the offending country to change its unfair practice, thus obviating the process required under the GATT.

Baldwin also notes some important disadvantages of undertaking

bilateral/plurilateral negotiations. The GATT rules normally require that any preferential elimination of tariffs and other restrictions must apply to the bulk of the trade of the countries involved. This means that a customs union or free-trade area will have to be established to satisfy this requirement. If neither is established, any trade concessions granted will have to be made available to all members according to the most-favored-nation (MFN) principle. To avoid free-riding, countries might seek to negotiate on products for which they are each other's main suppliers. If equivalent concessions are then sought so as to maintain a position of balanced trade, the negotiations may become very cumbersome inasmuch as it could be difficult to agree on an acceptable package that satisfied the desired equivalence.

As Baldwin further notes in the context of bilateral settlement of trade disputes, there is a danger that large countries may bully smaller countries into taking actions that may not necessarily be equitable or equivalent. This would especially be the case if there is significant interest-group lobbying and control intended to capture rents in particular circumstances. Finally, it is also possible that unilateral threats and actions may exacerbate disputes and trigger retaliation when the countries are similar in size. If retaliatory measures are in fact carried out, everyone will likely be made worse off.

Given the advantages and drawbacks of the bilateral/plurilateral approaches to negotiations, it is interesting to consider recent actions by the United States in particular. These actions include the negotiation of free-trade arrangements (FTA) with Israel and Canada, the Caribbean Basin Initiative (CBI), changes in the U.S. generalized system of preferences (GSP), special tariff arrangements for imported products containing U.S. components, and a variety of investigations of alleged unfair trade practices of foreign governments.[8]

The U.S.-Israel FTA became effective on September 1, 1985. It involves a phased elimination of existing bilateral tariffs over a ten-year period, and, even more noteworthy, it covers bilateral relations involving trade in services, intellectual property rights, and trade-related investment performance requirements. The undertaking of this agreement would appear to reflect a variety of motives from the standpoint of the United States. The possible motives include the desire to match the preferential arrangements between Israel and the EC, to demonstrate how agreements covering services and other topics could be shaped as a potential model for multilateral negotiations, and perhaps to make a political statement to reinforce

the close ties between the two nations. Since U.S. trade with Israel is comparatively small, this agreement cannot be expected to have more than a marginal economic effect on the United States; but the effect on Israel could be more noticeable.

Negotiations covering the U.S.-Canada FTA were completed in October 1987. The agreement was approved by the U.S. Congress and the Canadian Senate and took effect on January 1, 1989. The U.S.-Canada FTA envisions phased removal of bilateral tariffs over a ten-year period, dismantling of certain bilateral NTBs, and, perhaps of greatest importance, some potentially far-reaching agreements covering the harmonization of antidumping and subsidy-countervailing duty procedures and policies, settlement of bilateral disputes by binationally appointed panels, financial and other services, trade-related investment performance requirements, and U.S. access to energy supplies.

The U.S.-Canada FTA was initiated in large measure by Canada, which is the single largest trading partner of the United States. The bulk of Canada's export and import trade is with the United States. The FTA can be viewed broadly as an effort by Canada to obtain security of access to the U.S. market. From the U.S. standpoint, the FTA provides an opportunity to exercise some discipline over Canadian policies involving subsidies and direct foreign investment requirements, more assured access to Canadian energy supplies, and the liberalization of Canadian regulations covering banking, financial services, telecommunications, and other services.

Analysis of the potential economic effects of the FTA by Brown and Stern (1988) suggests that bilateral tariff elimination will enhance the welfare of both countries, particularly Canada; however, there could be some noticeable adjustment problems in some of Canada's relatively labor-intensive sectors. It is difficult to determine what impact the FTA will have on the procedures and policies governing trade and investment transactions and disputes, as this impact will depend on how the FTA is administered and the extent to which the agreement will foster mutual respect and trust between the two nations. As in the case of the U.S.-Israel FTA, the U.S.-Canada FTA may have an important demonstration effect on a variety of items on the Uruguay Round agenda.

The Caribbean Basin Initiative dates from August 1983. It was an effort designed to further relations with this groups of small island nations deemed to be politically important to the United States. It represents one of three U.S. preferential arrangements involving imports from developing countries (the others are the U.S. GSP and the special duty exemptions covering U.S. components in imported

products assembled in foreign countries and then returned to the United States for additional processing). In evaluating these various preferential arrangements, it is important to note that they are carefully circumscribed and thus exclude most labor-intensive manufactured imports such as textiles, clothing, and leather products. Furthermore, since its inception in 1974, the U.S. GSP has been of greatest benefit to the East Asian NICs. But this will change beginning in 1989, when imports from these countries will no longer be eligible for GSP treatment. In view of the exemption of most labor-intensive consumer manufactures from preferential treatment and the fact that U.S. tariffs on most other products are in any case already quite low, there may not be much scope for negotiating preferential arrangements with the United States that would be beneficial to developing countries.

With the very large increase in the U.S. trade deficit in the 1980s, both import-competing and export industries experienced considerable problems of adjustment. These problems were manifested politically in terms of pressures to limit imports in a number of important sectors and to institute actions aimed at foreign government policies that were deemed detrimental to U.S. export interests. As a consequence, U.S. trade policy has taken on a shrill and often threatening tone that markedly departs from the more benign quality that characterized the United States when it was in a position of leadership in enhancing the effectiveness of the multilateral trading system.

Our discussion of U.S. policies and experiences with bilateral/plurilateral trade policy initiatives suggests that there are special circumstances motivating the free-trade arrangements with Israel and Canada that may not lend themselves readily to similar arrangements with other countries. In addition, there may not be much scope for the expansion of preferential arrangements so long as the product coverage of these arrangements remains limited. Moreover, if the product coverage were expanded, the benefits of preferential arrangements would be diluted as more countries became eligible to participate in the arrangements. Finally, while the U.S. concern with the alleged unfair policies of its major trading partners is understandable, it is by no means clear that unilateral U.S. threats and actions are the best means for alleviating the situation.

It is of interest to consider briefly the positions of Western Europe, Japan, and the NICs from a bilateral/plurilateral perspective. The EC and the EFTA have been preoccupied over the years with issues of intra-European integration. Their preoccupation is likely to continue, especially in light of the objective to remove internal

barriers to trade and factor mobility in the EC by 1992. Japan's major policy concerns have been with the United States and the East Asian NICs. Although efforts have been made to foster regional integration in Southeast Asia and Latin America, these efforts have thus far been of limited significance economically. One obvious reason for this is that the fortunes of the countries in these regions are dependent to the largest extent on their relations with the industrialized countries rather than with each other.

Directions for the Future

There have been dramatic changes in global trading patterns in the past two decades, especially from the U.S. perspective. These changes reflect both long-term structural influences associated with changing relative-factor endowments, technology, and related government policies, and short-term influences driven in large measure by macroeconomic polices and adjustments. There has been a shift in U.S. trade policies that mirrors the changing role of the United States in the multilateral trading system from a position of leadership and champion of the ideal of freer trade to a position in which trade policy actions are increasingly shaped to respond to domestic interests.

Despite this shift in the focus of U.S. trade policies, the GATT multilateral system has continued to function, making it possible for Japan, the East Asian NICs, and to a lesser extent others to have had stunning export successes. Access to the U.S. market has been the key to these developments. In this connection it is important to understand that the U.S. trade imbalances of the 1980s are in large measure a reflection of the U.S. macroeconomic imbalances. As these imbalances diminish, the long-term structural factors will come to the fore in the evolution of the trading system. What will be needed then is a vision of how the system should be adapted to accommodate the adjustments that will be required in the course of time.

The major challenge in the trading system today is to find more effective means of adjustment so that it will be possible to reverse the increasing use of administered protection and the resort to VERs by the United States and other industrialized countries that so often work to the detriment of small countries. The GATT is designed to shield small countries from the sometimes capricious and damaging actions of larger and more powerful countries. However, protectionism and the increasing resort to selective threats and restrictions suggest that the ideals of the GATT system have been

seriously compromised. The appropriate course of action is to prevent the further fragmentation of the GATT system and to embark on a concerted effort to reinvigorate and strengthen the system. The negotiations in the Uruguay Round and beyond are in the right direction. But meaningful negotiations require political commitment not only by the United States but by all the major trading countries.

Table 6.1 U.S. Trade by Areas and Commodity Groups, 1973 and 1986 (Billions of U.S. Dollars and Percentages; Exports F.O.B. and Imports C.I.F.)

	Japan					Western Europe				
	Exports	%	Imports	%	Balance	Exports	%	Imports	%	Balance
Primary products										
1973	5.2	(63.4)	0.5	(4.8)	4.7	8.2	(38.9)	3.8	(18.6)	5.4
(%)	(21.1)		(1.9)			(33.2)		(14.1)		
1986	10.1	(44.1)	1.3	(1.5)	8.8	14.1	(24.3)	14.0	(15.2)	0.1
(%)	(21.0)		(1.5)			(29.3)		(16.4)		
Semi-manufactures										
1973	0.9	(11.0)	1.8	(17.1)	–0.9	3.1	(14.7)	4.3	(21.1)	–0.8
(%)	(9.1)		(16.8)			(34.1)		(40.2)		
1986	4.2	(18.3)	6.3	(7.4)	–2.1	9.1	(15.7)	16.9	(18.3)	–7.8
(%)	(13.4)		(13.6)			(29.0)		(36.6)		
Engineering products										
1973	1.7	(20.7)	6.8	(64.8)	–5.1	8.3	(39.3)	8.5	(41.7)	–0.2
(%)	(5.6)		(26.8)			(27.3)		(33.5)		
1986	7.1	(31.0)	72.0	(84.3)	–64.9	29.5	(50.9)	44.4	(48.2)	–14.9
(%)	(6.7)		(39.5)			(28.0)		(24.4)		
Consumer goods										
1973	0.3	(3.7)	1.3	(12.4)	–1.0	1.0	(4.7)	3.2	(15.7)	–2.2
(%)	(8.8)		(14.9)			(29.4)		(36.8)		
1986	0.9	(3.9)	5.0	(5.9)	–4.1	3.1	(5.3)	13.7	(14.9)	–10.6
(%)	(8.6)		(8.6)			(29.5)		(23.6)		
Total trade[b]										
1973	8.2	(100.0)	10.5	(100.0)	–2.3	21.1	(100.0)	20.4	(100.0)	0.7
(%)	(11.7)		(14.3)			(30.1)		(27.7)		
1986	22.9	(100.0)	85.4	(100.0)	–62.5	58.0	(100.0)	92.1	(100.0)	–34.1
(%)	(11.2)		(22.4)			(28.3)		(24.1)		

Sources: Adapted from GATT, *International Trade 1986–87; International Trade 1981–82.*

[a]Includes Canada, Australia, New Zealand, South Africa, and the Eastern Trading Area.
[b]Includes commodities not classified according to kind.

Table 6.1—continued

Developing Countries					Total World[a]				
Exports	%	Imports	%	Balance	Exports	%	Imports	%	Balance
6.5	(31.6)	13.8	(62.7)	–7.3	24.7	(35.2)	27.0	(36.7)	–2.3
(26.3)		(51.1)			(100.0)		(100.0)		
17.2	(25.0)	46.6	(37.6)	–29.4	48.1	(23.5)	85.6	(22.4)	–37.5
(35.8)		(54.4)			(100.0)		(100.0)		
3.3	(16.0)	1.6	(7.3)	1.7	9.9	(14.1)	10.7	(14.5)	–0.8
(33.3)		(15.0)			(100.0)		(100.0)		
11.3	(16.4)	(9.7)	(7.8)	1.6	31.4	(15.3)	46.2	(12.1)	–14.8
(36.0)		(21.0)			(100.0)		(100.0)		
8.5	(41.3)	2.6	(11.8)	5.9	30.4	(43.3)	25.4	(34.5)	5.0
(28.0)		(10.2)			(100.0)		(100.0)		
32.5	(47.3)	33.4	(26.9)	–0.9	105.4	(51.5)	(182.3)	(47.8)	–76.9
(30.8)		(18.3)			(100.0)		(100.0)		
0.9	(4.4)	3.7	(16.8)	–2.8	3.4	(4.8)	8.7	(11.8)	–5.3
(26.5)		(42.5)			(100.0)		(100.0)		
3.6	(5.2)	32.3	(26.0)	–28.7	10.5	(5.1)	58.0	(15.2)	–47.5
(34.3)		(55.7)			(100.0)		(100.0)		
20.6	(100.0)	22 0	(100.0)	–1.4	70.2	(100.0)	73.6	(100.0)	–3.4
(29.3)		(29.9)			(100.0)		(100.0)		
68.7	(100.0)	124.0	(100.0)	–55.3	204.6	(100.0)	381.4	(100.0)	–176.8
(33.6)		(32.5)			(100.0)		(100.0)		

Table 6.2 Japanese Trade by Areas and Commodity Groups, 1973 and 1986 (Billions of U.S. Dollars and Percentages; Exports F.O.B. and Imports C.I.F.)

	United States					Western Europe				
	Exports	%	Imports	%	Balance	Exports	%	Imports	%	Balance
Primary products										
1973	0.4	(4.2)	5.8	(62.4)	–5.4	0.3	(4.5)	0.7	(17.1)	-0.4
(%)	(20.0)		(20.5)			(15.0)		(2.5)		
1986	1.1	(1.4)	11.8	(44.5)	–10.7	0.5	(1.3)	2.9	(19.0)	–2.4
(%)	(21.2)		(15.3)			(9.6)		(3.8)		
Semi-manufactures										
1973	1.5	(15.6)	1.1	(11.8)	0.4	1.1	(16.7)	1.1	(26.8)	0.0
(%)	(17.2)		(31.4)			(12.6)		(31.4)		
1986	5.7	(7.0)	5.0	(18.9)	0.7	3.3	(8.8)	4.9	(32 0)	–1.6
(%)	(19.4)		(31.4)			(11.2)		(30.8)		
Engineering products										
1973	6.4	(66.7)	1.9	(20.4)	4.5	4.5	(68.2)	1.4	(34.1)	3.1
(%)	(29.6)		(52.8)			(20.8)		(38.9)		
1986	69.2	(85.1)	8.1	(30.6)	61.1	30.9	(82.0)	4.7	(30.7)	26.2
(%)	(43.5)		(52.9)			(19.4)		(30.7)		
Consumer goods										
1973	1.1	(11.5)	0.4	(4.3)	0.7	0.6	(9.1)	0.8	(19.5)	–0.2
(%)	(25.6)		(14.3)			(14.0)		(28.6)		
1986	4.4	(5.4)	1.0	(3.8)	3.4	2.7	(7.2)	2.6	(17.0)	0.1
(%)	(32.4)		(11.0)			(19.9)		(28.6)		
Total trade[b]										
1973	9.6	(100.0)	9.3	(100.0)	0.3	6.6	(100.0)	4.1	(100.0)	2.5
(%)	(26.0)		(24.3)			(17.9)		(10.7)		
1986	81.3	(100.0)	26.5	(100.0)	54.8	37.7	(100.0)	15.3	(100.0)	22.4
(%)	(38.9)		(22.2)			(18.0)		(12.8)		

Sources: Adapted from GATT, *International Trade 1986–87; International Trade 1981–82.*

[a]Includes Canada, Australia, New Zealand, South Africa, and the Eastern Trading Area.
[b]Includes commodities not classified according to kind.

Table 6.2—continued

Developing Countries					Total World[a]				
Exports	%	Imports	%	Balance	Exports	%	Imports	%	Balance
1.0	(7.4)	13.8	(85.2)	–12.8	2.0	(5.4)	28.3	(73.9)	–26.3
(50.0)		(48.8)			(100.0)		(100.0)		
2.8	(4.7)	44.4	(79.9)	–41.6	5.2	(2.5)	77.3	(64.7)	–72.1
(53.8)		(57.4)			(100.0)		(100.0)		
4.2	(30.9)	0.7	(4.3)	3.5	8.7	(23.6)	3.5	(9.1)	5.2
(48.3)		(20.0)			(100.0)		(100.0)		
13.3	(22.2)	4.1	(7.4)	9.2	29.4	(14.1)	15.9	(13.3)	13.5
(45.2)		(25.8)			(100.0)		(100.0)		
6.3	(46.3)	0.3	(1.9)	6.0	21.6	(58.5)	3.6	(9.4)	18.0
(29.2)		(8.3)			(100.0)		(100.0)		
38.1	(63.7)	2.2	(4.0)	35.9	158.9	(76.0)	15.3	(12.8)	143.6
(24.0)		(14.4)			(100.0)		(100.0)		
1.9	(14.0)	1.2	(7.4)	0.7	4.3	(11.7)	2.8	(7.3)	1.5
(44.2)		(42.9)			(100.0)		(100.0)		
5.0	(8.4)	4.2	(7.6)	0.8	13.6	(6.5)	9.1	(7.6)	4.5
(36.8)		(46.2)			(100.0)		(100.0)		
13.6	(100.0)	16.2	(100.0)	–2.6	36.9	(100 0)	38.3	(100.0)	–1.4
(36.9)		(42.3)			(100.0)		(100.0)		
59.8	(100.0)	55.6	(100.0)	4.2	209.1	(100.0)	119.4	(100.0)	89.7
(28.6)		(46.6)			(100.0)		(100.0)		

Table 6.3 European Community and EFTA Trade by Areas and Commodity Groups, 1973 and 1986 (Billions of U.S. Dollars and Percentages; Exports F.O.B. and Imports C.I.F.)

	United States					Japan				
	Exports	%	Imports	%	Balance	Exports	%	Imports	%	Balance
Primary products										
1973	2.9	(15.9)	7.8	(37.5)	–4.9	0.6	(17.1)	0.3	(5.1)	0.3
(%)	(22.1)		(12.5)			(4.6)		(0.5)		
1986	11.3	(13.4)	14.7	(22.9)	3.4	2.5	(18.2)	0.5	(1.2)	2.0
(%)	(26.7)		(10.9)			(5.9)		(0 4)		
Semi-manufactures										
1973	3.9	(21.4)	3.3	(15.9)	0.6	1.0	(28.6)	1.1	(18.6)	–0.1
(%)	(18.3)		(31.4)			(4.7)		(10.5)		
1986	15.4	(18 3)	10.4	(16.2)	5.0	4.4	(32.1)	3.6	(8.7)	0.8
(%)	(21.4)		(32.8)			(6.1)		(11.4)		
Engineering products										
1973	8.8	(48.4)	8.2	(39.4)	0.6	1.3	(37.1)	3.8	(64.4)	–2.5
(%)	(21.9)		(46.6)			(3.2)		(21.6)		
1986	44.2	(52.6)	33.8	(52.6)	10.4	4.4	(32.1)	33.8	(82.0)	–29.4
(%)	(31.1)		(38.9)			(3.1)		(38.9)		
Consumer goods										
1973	2.5	(13.7)	1.2	(5.8)	1.3	0.6	(17.1)	0.7	(11.9)	–0.1
(%)	(19.1)		(11.3)			(4.6)		(6.6)		
1986	12.0	(14.3)	3.6	(5.6)	8.4	2.2	(16.1)	3.0	(7.3)	–0.8
(%)	(36.8)		(10.9)			(6.7)		(9.1)		
Total trade[b]										
1973	18.2	(100.0)	20.8	(100.0)	–2.6	3.5	(100.0)	5.9	(100.0)	–2.4
(%)	(21.5)		(21.5)			(4.1)		(6.1)		
1986	84.1	(100.0)	64.3	(100.0)	19.8	13.7	(100.0)	41.2	(100.0)	–27.5
(%)	(28.5)		(22.1)			(4.6)		(14.2)		

Sources: Adapted from GATT, *International Trade 1986–87; International Trade 1981–82.*

[a]Includes Canada, Australia, New Zealand, South Africa, and the Eastern Trading Area. Intra-EC and EFTA trade is excluded from total world. Data for 1973 refer to the EC(10) and for 1986 to the EC(12) and are thus not strictly comparable.

[b]Includes commodities not classified according to kind.

Table 6.3—continued

Developing Countries					Total World[a]				
Exports	%	Imports	%	Balance	Exports	%	Imports	%	Balance
4.5	(14.5)	37.1	(85.7)	–32.6	13.1	(15.0)	62.6	(61.8)	–49.5
(34.4)		(59.3)			(100.0)		(100.0)		
17.1	(14.4)	79.5	(68.0)	–62.4	42.3	(14.3)	134.8	(46.4)	–92 5
(40.4)		(59.0)			(100.0)		(100.0)		
8.2	(26.5)	2.0	(4.6)	6.2	21.3	(24.3)	10.5	(10.4)	10.8
(38.5)		(19.0)			(100.0)		(100.0)		
30.8	(25.9)	7.8	(6.7)	23.0	71.9	(24.4)	31.7	(10.9)	40.2
(42.8)		(24.6)			(100.0)		(100.0)		
15.4	(49.7)	1.0	(2.3)	14.4	40.1	(45.8)	17.6	(17.4)	22.5
(38.4)		(5.7)			(100.0)		(100.0)		
57.1	(48.0)	12.2	(10.4)	44.9	141.9	(48.1)	87.0	(29.9)	54.9
(40.2)		(14.0)			(100.0)		(100.0)		
2.7	(8.7)	3.1	(7.2)	–0.4	13.1	(15.0)	10.6	(10.5)	2.5
(20.6)		(29.2)			(100.0)		(100.0)		
11.4	(9.6)	16.1	(13.8)	–4.7	32.6	(11.1)	33.1	(11.4)	–0.5
(35.5)		(48.9)			(100.0)		(100.0)		
31.0	(100.0)	43.3	(100.0)	–12 3	87.6	(100.0)	101.3	(100.0)	–13.7
(36.6)		(44.8)			(100.0)		(100.0)		
118.9	(100.0)	116.9	(100.0)	2.0	294.9	(100.0)	290.5	(100.0)	4.4
(40.3)		(40.2)			(100.0)		(100.0)		

Table 6.4 Major Industrial Country NTB Coverage Ratios, by Product Category for Developing and Industrial Countries, 1983

Industrial Country Markets	All Products	All, less Fuels	Agri-culture	Manu-factures	Textiles	Footwear	Iron and Steel	Electrical Machinery	Vehicles	Rest of Manufactures
European Economic Community	25.4	26.9	26.9	29.9	68.0	9.9	31.9	7.0	8.4	14.7
	18.6	18.9	47.7	15.2	15.6	0.6	51.8	15.8	49.9	9.3
Belgium-Luxembourg	38.1	45.1	35.1	54.7	43.5	5.6	40.2	0.2	0.1	58.1
	25.7	27.1	72.0	22.5	30.4	6.5	43.4	21.4	56.5	13.5
Denmark	29.5	35.8	36.3	36.7	72.3	16.3	34.4	0.0	0.5	5.4
	9.5	10.9	20.9	9.8	11.1	0.2	48.5	5.9	38.0	5.0
France	50.1	28.6	28.1	33.0	64.6	11.3	35.1	35.5	29.0	21.3
	31.3	27.4	53.3	25.0	21.9	0.3	78.1	42.8	45.6	18.3
West Germany	18.1	23.9	16.6	30.2	71.9	2.9	32.2	0.2	0.0	3.5
	13.7	14.5	28.5	13.3	8.8	0.5	51.6	8.8	56.2	7.2
Greece	6.2	12.9	20.1	11.8	33.5	41.2	43.6	6.9	41.9	2.9
	26.1	26.4	61.8	22.6	4.4	0.1	50.4	16.5	71.9	10.2
Ireland	19.6	19.9	21.2	19.5	55.5	10.5	4.4	0.0	0.0	9.3
	13.4	13.8	29.1	12.8	17.6	0.0	19.2	0.3	67.9	6.3
Italy	7.3	16.2	32.1	12.0	49.0	0.3	33.8	0.1	0.0	1.0
	11.0	11.9	47.6	6.0	4.4	0.2	47.0	6.9	16.8	3.1
Netherlands	29.3	32.3	38.3	28.0	72.4	8.9	15.9	0.0	0.2	8.7
	25.8	27.1	68.8	15.3	6.7	1.7	35.7	6.8	53.3	11.6
United Kingdom	23.3	27.4	24.4	30.4	78.6	18.0	26.8	5.8	0.0	5.0
	15.4	17.0	44.5	13.2	26.0	0.6	40.4	16.7	46.7	6.8

Australia	43.7	27.9	21.6	28.6	29.1	48.5	42.5	62.5	0.0	22.3
	23.6	23.4	47.7	22.7	28.1	51.6	57.8	46.8	0.7	21.7
Austria	13.8	19.2	40.5	6.1	15.1	0.0	0.0	0.0	1.9	0.0
	4.5	4.7	39.9	2.4	0.0	0.0	0.0	0.0	3.0	3.3
Finland	38.4	26.9	28.7	27.5	63.0	56.2	15.8	0.0	0.0	0.6
	10.9	7.4	32.6	5.5	23.5	72.0	42.8	0.0	0.0	0.5
Japan	12.1	17.5	53.3	4.4	13.0	36.3	0.0	0.0	0.0	1.3
	21.4	16.9	36.8	9.7	11.0	27.9	0.0	0.0	0.0	10.6
Norway	16.8	18.2	15.4	20.9	59.5	20.5	20.6	0.0	43.9	5.0
	4.3	4.9	27.0	3.2	39.5	0.1	0.0	0.0	0.2	0.2
Switzerland	43.4	34.5	67.3	19.5	45.8	0.0	7.7	10.1	0.0	3.6
	27.2	22.4	74.9	17.4	60.9	0.0	3.8	28.9	1.1	15.1
United States	54.0	18.9	25.1	18.6	64.0	16.7	48.9	5.3	0.0	5.4
	26.0	16.6	23.5	16.5	31.1	0.0	35.6	5.2	34.7	6.4
All markets	34.3	22.5	31.2	21.3	57.2	17.3	31.4	6.1	5.0	11.0
	21.0	17.1	40.5	14.5	23.3	3.5	34.3	11.8	31.4	9.8

Source: Nogues, Olechowski, and Winters (1985: 43).

Note: The top figure in the table body represents developing countries and the bottom figure industrial countries.

Table 6.5 Summary of Effects on the Major Industrialized and Developing Countries Due to Elimination of Agricultural Subsidies, All Tariffs, and NTBs in Developed Countries

	Value of Change in Exports		Value of Change in Imports		Gross Change in Employment[a]		% Change in Terms Trade	% Change in Effective Exchange Rate[b]	% Change in Prices[c]
	$ Million	%	$ Million	%	000 Workers	%			
Industrialized countries									
Australia	1403.6	9.7	1556.2	13.2	53.7	0.93	0.95	0.4	–0.6
Austria	987.4	10.9	969.7	8.4	75.9	2.58	–0.00	–0.4	–0.6
Canada	1498.4	3.7	1567.7	4.1	50.4	0.53	0.16	0.4	–0.3
European Community									
Belgium-Luxembourg	1555.0	4.4	1509.7	4.3	88.0	2.28	–0.12	2.3	–2.9
Denmark	483.1	5.0	550.7	4.4	32.4	1.35	0.95	1.2	–1.2
France	4396.4	7.4	4298.9	6.7	310.1	1.49	–0.09	–1.2	–0.0
Germany	4494.4	4.1	4053.9	4.6	245.5	1.00	–0.61	0.1	–1.2
Ireland	158.6	4.3	197.4	4.7	15.8	1.54	1.19	1.0	–0.6
Italy	2818.1	7.2	2608.7	6.1	464.8	2.46	–0.43	–1.6	0.7
Netherlands	1726.2	4.0	1936.5	4.9	55.4	1.22	0.39	0.4	–1.1
United Kingdom	2947.5	6.0	2641.9	4.7	175.2	0.72	–0.46	–1.1	–0.1
Total European Community	18579.3	5.3	17797.9	5.2	1387.1	1.38	–0.29	–0.5	–0.6
Finland	500.4	7.4	481.1	6.5	62.5	2.91	–0.22	–0.9	1.7
Japan	4573.6	6.4	3866.4	6.0	1931.1	3.66	–1.10	–3.0	2.5
New Zealand	268.7	9.2	320.6	9.8	21.9	1.82	1.87	1.2	–0.9
Norway	565.4	6.7	569.0	5.1	41.7	2.33	0.17	–1.2	1.3
Sweden	600.6	3.1	520.2	2.7	28.1	0.69	–0.43	0.2	–0.6
Switzerland	952.7	6.0	947.5	6.4	114.5	4.07	–0.10	–1.6	1.2
United States	4383.9	3.7	4404.3	3.4	184.1	0.21	0.08	–0.7	–0.1
Total industrialized	34314.0	5.2	33000.4	5.1	3951.2	1.46	–0.19	–0.9	0.1

Developing countries									
Argentina	–20.9	–0.5	69.5	2.3	114.0	1.10	1.99	3.1	–1.0
Brazil	–0.3	–0.0	144.4	1.1	98.3	0.24	1.54	1.8	–0.2
Chile	–3.6	–0.2	–1.8	–0.1	8.3	0.30	–0.23	0.3	–0.1
Colombia	5.3	0.3	40.5	2.4	23.6	0.30	1.76	2.9	–0.4
Greece	42.9	1.5	61.4	1.0	28.4	0.71	1.04	2.2	–0.4
Hong Kong	313.8	4.3	227.7	2.6	162.9	12.30	–0.90	16.6	–8.4
India	50.8	0.9	63.5	1.2	428.4	0.19	0.14	2.7	–0.3
Israel	23.1	0.9	14.8	0.4	8.0	0.71	0.27	1.6	–0.4
South Korea	130.0	1.5	124.6	1.4	123.1	0.98	–0.03	3.6	–0.8
Mexico	16.3	0.3	60.0	1.0	72.3	0.42	0.90	1.6	–0.4
Portugal	45.1	2.3	20.2	0.5	45.8	1.48	0.08	2.6	–0.9
Singapore	4.2	0.1	–16.9	–0.2	14.3	1.65	–0.01	1.0	–0.9
Spain	62.1	0.7	13.6	0.1	48.1	0.39	0.31	1.2	–0.2
Taiwan	118.3	1.4	147.4	1.9	71.7	1.27	0.22	3.5	–1.1
Turkey	58.8	2.8	67.1	1.3	41.6	0.28	1.11	2.0	–0.3
Yugoslavia	61.1	1.1	55.2	0.7	30.5	0.63	0.17	1.6	–0.3
Total LDCs	906.9	1.1	1091.3	1.0	1319.3	0.36	0.80	2.2	–0.5
All countries	35220.8	4.7	34091.7	4.5	5270.4	0.83	–0.05	–0.4	0.0

Source: Adapted from Deardorff and Stern (1988).

[a]Refers to sum of changes in the home and export sectors within industries.
[b]Positive = appreciation.
[c]Index of import and home prices.

Table 6.6 Economic Growth Rates in the Asian and Latin American NICs, 1963–1985

Country	1963–1973		1973–1985		1963–1985	
	$\frac{\Delta Y}{Y}$	$\frac{\Delta(Y/P)}{(Y/P)}$	$\frac{\Delta Y}{Y}$	$\frac{\Delta(Y/P)}{(Y/P)}$	$\frac{\Delta Y}{Y}$	$\frac{\Delta(Y/P)}{(Y/P)}$
East Asian NICs						
Hong Kong	8.2	6.0	8.7	6.3	8.5	6.2
Korea	9.6	7.1	7.3	5.7	8.7	6.8
Singapore	11.6	9.5	7.9	6.5	9.5	7.8
Taiwan	10.7	7.6	7.9	5.9	9.2	6.8
Southeast Asia						
Indonesia	6.9	4.6	5.9	3.6	7.0	4.6
Malaysia	6.6	3.9	7.0	4.5	7.1	4.5
Philippines	5.2	2.2	4.0	1.3	5.1	2.3
Thailand	8.0	4.9	6 6	4.3	7.2	4.5
India	3.5	1.1	4.4	2.1	3.8	1.5
Latin American NICs						
Argentina	4.8	3.2	0.2	–1.4	2.4	0.8
Brazil	8.3	5.5	4.3	1.9	7.1	4.6
Mexico	7.8	4.4	4.8	1.9	6.3	3.2

Source: Adapted from Balassa (1988: S283).

Note: $\Delta Y/Y$ = rate of growth of gross domestic product (GDP); $\Delta(Y/P)/(Y/P)$ = rate of growth of per capita GDP.

Table 6.7 Exports of Nonfuel Primary Products and Manufactures and Market Shares of the Asian and Latin American NICs, 1963–1984 (Millions of U.S. Dollars and Percentages)

	1963				1973				1984			
	Nonfuel Primary Products		Manufactures		Nonfuel Primary Products		Manufactures		Nonfuel Primary Products		Manufactures	
Country	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
East Asian NICs	469	6.6	938	47.6	1,406	7.7	11,016	66.5	5,117	10.0	78,666	69.7
Hong Kong	53	0.7	615	31.2	125	0.7	3,650	22.0	542	1.1	16,913	15.0
Korea	45	0.6	39	2.0	473	2.6	2,700	16.3	1,737	3.4	26,681	23.7
Singapore	168	2.3	158	8.0	108	0.6	998	6.0	670	1.3	7,374	6.5
Taiwan	203	2.8	126	6.4	700	3.8	3,668	22.2	2,168	4.2	27,698	24.6
Southeast Asia	2,499	34.9	95	4.8	6,738	36.8	929	5.6	17,890	34.9	12,040	10.7
Indonesia	425	5.9	2	0.1	1,533	8.4	61	0.4	3,839	7.5	2,201	2.0
Malaysia	955	13.3	49	2.5	2,511	13.7	347	2.1	7,109	13.9	4,411	3.9
Philippines	683	9.5	33	1.7	1,493	8.2	277	1.7	2,162	4.2	3,002	2.7
Thailand	436	6.1	11	0.6	1,201	6.6	244	1.5	4,780	9.3	2,426	2.2
India	888	12.4	671	34.0	1,353	7.4	1,561	9.4	3,006	5.9	4,183	3.7
Latin American NICs	3,303	46.1	267	13.6	8,809	48.1	3,050	18.5	25,218	49.2	17,908	15.9
Argentina	1,275	17.8	78	4.0	2,527	13.8	730	4.4	6,353	12.4	1,429	1.3
Brazil	1,352	18.9	42	2.1	4,779	26.1	1,217	7.4	14,937	29.2	11,558	10.2
Mexico	676	9.4	147	7.5	1,503	8.2	1,103	6.7	3,928	7.7	4,930	4.4
Total	7,159	100.0	1,971	100.0	18,306	100.0	16,556	100.0	51,231	100.0	112,797	100.0
LDC Total	18,460		3,430		42,349		22,945		99,095		146,986	

Source: Adapted from Balassa (1988: S278–S279).

Note: Nonfuel primary products include Standard International Trade Classification (SITC) classes 0 + 1 + 2 + 4 + 68; manufactures include classes 5–8 less 68.

Table 6.8 Average Pre–Tokyo Round Base-Rate Tariffs on Industrial Products, Tokyo Round Offer-Rate Tariffs, and Percentage Depth of Cut for the Major Industrialized Countries in the Tokyo Round (Weighted by Own-Country Imports)

Country	(1) Average Pre–Tokyo Round Base Rate (%)	(2) Tokyo Round Offer Rate (%)	(3) Average Cut (%)
Australia[a]	17.0	16.5	2.8
Austria	15.4	12.1	21.5
Canada[a]	7.3	5.2	29.1
European Economic Community			
Belgium-Luxembourg	8.2	5.9	28.3
Denmark	9.0	6.6	25.8
France	8.3	6.0	27.8
German Federal Republic	8.7	6.3	27.1
Ireland	9.4	6.9	26.7
Italy	7.3	5.4	27.0
Netherlands	9.2	6.8	26.7
United Kingdom	7.3	5.2	27.7
Finland	9.6	7.1	25.2
Japan[a]	3.9	2.9	25.3
New Zealand	18.9	16.7	11.8
Norway	6.9	5.2	24.8
Sweden	6.4	5.0	23.0
Switzerland	3.9	3.1	21.2
United States	6.5	4.3	34.1
All countries	7.8	5.8	26.4

Source: Deardorff and Stern (1986: 49).

[a]Based on prevailing rates, which include unilateral reductions in the pre–Tokyo Round tariffs.

Notes

1. See Saxonhouse and Stern (1989) for an empirical analysis in support of this assertion.

2. According to Nogues, Olechowski, and Winters (1985), there are five major types of NTBs that impinge directly on imports at national borders: (a) measures increasing the landed price of imports (tariff quotas, seasonal tariffs); (b) measures for enforcement of decreed prices (variable levies, minimum price systems, voluntary export price restraints); (c) quantitative import restrictions (prohibitions, quotas, discretionary import authorizations); (d) VERs; and (e) other import-management measures (price-volume surveillance, antidumping and countervailing duties).

3. Nogues, Olechowski, and Winters (1985) also calculated unweighted frequency measures of NTBs as well as measures using world imports as weights. These produce different levels as compared to using own-county imports as weights, but all three measures are qualitatively similar.

4. Separate calculations by Nogues, Olechowski, and Winters (1985) suggest that major borrowing developing countries are strongly affected by NTBs. On average, moreover, the NICs apparently have higher coverage ratios than developing countries. Finally, of all the NTBs considered, VERs are shown to have a predominant impact on the coverage ratios for manufactures with respect to the developing countries especially.

5. A similar conclusion is reached in Balassa and Balassa (1984) and in USTR (1984, especially pp. 53–58 and 119–125). Bergsten and Cline (1983, especially pp. 70–72) consider the path of NTB protection in the United States from 1967 to 1982. They note that import quotas on steel, oil, meat, and sugar were phased out after 1974, and restrictions on television sets and footwear were lifted after 1981. After 1980, however, protection was increased in automobiles, textiles, sugar, and steel. They conclude that, "overall, the trend in protection over the last several years has been at best ambiguous, and more probably toward intensification. . . . Nonetheless, it would appear that the pressures for protection since the mid-1970s have increased relatively more than has actual protection."

6. The following discussion is based in large part on Hoekman (1988b), which is a detailed treatment of the scope for agreement on the issues of safeguards, services, and agriculture in the Uruguay Round negotiations.

7. See Hoekman (1988a) for an argument and proposal for linking safeguards and services.

8. Details on these various actions are given in USITC (1988).

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chapter seven

Structural Change and U.S. Policy: A Summing Up

James K. Galbraith

The chapters that make up this volume address structural change within the developing economies and in terms of their relationship to the wider world. Taken together, they provide a sweeping survey of conditions in the industrializing world, and present an image of pervasive transformation. Though the portrait is in several respects selective and thus (unintentionally) overdrawn, there is a central message: that international redeployment of manufacturing activity is progressing at great speed and in all directions. We are witnessing the triumph of economic integration, of the open model, of development based on Northern technologies and Southern labor. It is the triumph of the multinational corporation (as the share of intrafirm trade rises sharply in the total) and of the national corporation that seeks not autonomy from but complementarity with Northern partners in technology and market access. By implication, we are also witnessing the failure of autarkic and import-substituting alternatives, of the self-sufficient, backward-linked development visions of the theories of the Economic Commission for Latin America.

In Chapter 1, Castells and Tyson note the wide expanses of Africa and Latin America where the world factory is as yet unheard of. The debt crisis suggests that the undisputed technological success of the open model may be hindered by financial failure. And the successes of the most rapidly growing developing economies of this decade have occurred in the least open developing economies—China and India—and more as a consequence of internal reform and financial insularity than one of increasing exposure to trade (even though the latter, too, is happening in both countries). Nevertheless, the experiences of Brazil, Mexico, and the Asian

"tigers," among others, are major phenomena—even if they are not wholly typical of the poor countries of the planet.

The redeployment now under way is evidently no respecter of geography, history, or politics. Nations as diverse as China, Mexico, Brazil, Korea, Singapore, Hong Kong, and Taiwan are becoming major sites of modern manufacturing. Prior institutional structure appears barely relevant to this process—openness, political stability, available transport, and some prior commitment to development of a competent labor force apart. As Castells and Tyson emphasize, the process is not taking place in or significantly benefiting the poorest countries in the developing world; but it is taking place everywhere else. And it potentially can happen virtually anywhere.

Several authors in this volume examine the suggestion that new technologies will foster a "redeployment back North," such as might leave the new industrial labor forces of the developing countries without an outlet for their services. Their conclusions run against that hypothesis. Indeed, a capable workforce, once in place within a developing country, acts as a magnet for investment; and as particular industries come and go, the trend is ever toward less footloose, more sophisticated, better-paying endeavors. Examples of Northward relocation do turn up, but on examination they usually reflect (1) a change of technique resulting in economies of concentration or requiring product development close to home, (2) newly instituted protection in the Northern market, or (3) unstable political or economic conditions in the Southern country. While the future remains open to influence by policy, we are still very far from having Northern wage and cost competition with the South.

Redeployment affects a vast range of industries, from textiles to steel, automobiles, chemicals electronic assembly, and even aircraft. It will extend up the technological range as basic competencies improve. Although it appears that individual countries must often concentrate their resources and specialize in one or a few manufacturing niches, the choice of niche seems barely, if at all, determined by fixed circumstance. If one's fixed factor of production is labor, revealed comparative advantage seems to consist of whatever one decides to specialize in.[1]

Finally, it is generally agreed that redeployment and consequent North-South economic integration are good things if they can be made to work. De-linking and the development of an autonomous industrial base have few advocates in this volume—although an argument for careful and controlled matching of external financial obligations to export dependency would presumably be well received. As integration proceeds, real wages in Southern industry

have a demonstrated tendency to rise; development does not immiserate so long as development occurs. There are social and environmental costs; an example is the Chinese system of education, as Lardy observes in Chapter 3. But the basic conclusion is that output, and economic welfare, should rise.

Trade-led growth is therefore a consensus recommendation. Each country must specialize in line with its abilities, opportunities, and preferences. Each must seek to serve a wider market than its own. Conversely, each must import its complementary requirements. Successful worldwide export-led growth is no contradiction in terms; rather, it is a game that can and must be played by everyone at once. But such growth does require that no major bloc of players be permitted to accumulate surpluses at the expense of worldwide growth of demand. And it requires that all players, North and South, accommodate themselves to a rapid pace of structural change. It is in fostering the former requirement and adapting to the latter that the United States faces important policy challenges.

U.S. Options

Worldwide economic integration itself no longer qualifies as a policy question; there is little practical choice about whether such integration will occur. The basic fate of the Asian NICs, given the financing from Japan and the alternative markets available (up to a point) in Europe, does not much depend on the details of U.S. trade policy. Internationalization will proceed: Where it is possible it is generally also profitable and efficient.

U.S. policy remains a powerful influence, nevertheless, over the pace, scope, and style of internationalization, and certainly over the role that the United States itself will play in a world of closely linked manufacturing economies. By means of trade policy and measures affecting technology transfer, we can influence strategies of redeployment, giving advantages to some regions over others or to multinationals with established market positions and access to credit over LDC national corporations without these advantages. By means of policy affecting credit and the debt, we can foster, or fail to foster, not only U.S. links to particular developing regions but also the market position of U.S. exporting interests. Most of all, by means of macroeconomic policies affecting the growth rate, the rate of interest, and the exchange value of the dollar, we can influence the pace as well as the structure of redeployment, exerting profound influence over the pattern of industry in the United States in the long run.

This final point merits further discussion in historical context. In

the late 1970s, the United States pursued a policy of low real interest rates and a competitive dollar, leading to rapid expansion of advanced U.S. exporting industries in line with rapid growth of markets for advanced capital goods and intermediates in the developing world. However, this policy—under then-prevailing world conditions—was inflationary. It led in practice to commodity price escalation followed by high nominal wage growth in the United States in 1979–1980. Then, in 1981, U.S. policy reversed course. A radical shift in the monetary regime imposed financial discipline worldwide, halting for a time both growth in the U.S. economy and economic expansion based on the growth of credit. The debt crisis occurred in precisely those countries that had most extensively integrated their financial structures with the North.

There then began a wholesale shift of the role of the United States in fostering development. U.S. growth resumed in 1983. Growth of demand in the United States due to the budget deficits and the extreme overvaluation of the dollar produced growth at prodigious rates in net U.S. demand for the manufactured products of developing countries. This in turn stimulated rapid growth, high employment, and high rates of structural transformation in those countries most equipped to expand exports to the United States—namely, the Asian tigers but also Brazil and Mexico, the Caribbean, and elsewhere.

At the same time, as net new commercial bank lending to developing countries did not resume, U.S. advanced exports to the developing countries did not recover. Those developing nations with the strongest trade relations with the United States enjoyed strong demand for their goods. But the financial straits that often accompanied export growth precluded both the growth of imports and the renewal of capital equipment, and so caused massive curtailment of both public and private investment in LDCs. Indeed, in many developing countries import levels slumped catastrophically and remain to this day far below their levels in 1980.

Partly for this reason, the United States ceased to be a net supplier of capital to the wider world and became, instead, a large importer of financial capital from both advanced and developing nations as well as a net importer of capital goods. The United States lost its competitive position in a wide range of advanced industries and markets, whereas European and (especially) Japanese industries continued to grow and prosper. Overall, the United States enjoyed steady growth of real GNP without inflation, but at the price of an increasing external debt and a declining position in the hierarchy of world trade.

The Plaza Hotel accords of September 1985 signaled a change in U.S. strategy. The underlying support of macroeconomic policy for the overvalued dollar ended, and U.S. real interest rates began a steady decline. At the same time, economic growth, growth of tax revenue (particularly payroll tax revenue), and restraint in the growth of the U.S. military budget began to produce steady declines in the U.S. federal budget deficit as a share of GNP. The resulting substantial depreciation of the dollar toward 1980 levels (in real terms) produced in 1987–1988 a rapid recovery of U.S. exports, particularly to Asia, and so permitted GNP expansion in the United States to continue despite the diminution of stimulus from fiscal policy. However, U.S. demand for manufactured imports remained very strong, continuing the pattern of structural shifts toward larger import shares. Therefore, the trade and current-account deficits of the United States remained very large, both in absolute terms and relative to historical experience.

A major reason for the continuing scale of U.S. trade imbalances lies in the asymmetric character of changes in U.S. trading patterns. Dollar depreciation has been very large in relation to Europe and Japan, but smaller (in some cases, nonexistent) in relation to the currencies of Canada, Latin America, and the Asian tigers. These areas supply a large and increasing share of U.S. imports, and Latin America, in particular, is a major potential market for U.S. exports of investment goods and intermediates. Thus the noncorrection of exchange rates with, say, Mexico fosters both sustained growth of U.S. demand for Mexican manufactured exports and depressed Mexican demand for U.S. exports. The macroeconomic results include not only lower inflation in the United States as inexpensive manufactured imports continue to place strong competitive pressure on U.S. costs, but also a continued pattern of U.S. trade deficits (which, in the long run, are unsustainable). The competitiveness of the U.S. exporting industry, badly damaged in the period of dollar overvaluation, has not been reestablished on a scale sufficient to support U.S. import levels, and U.S. exports remain well below U.S. demand for imports at full employment.

In this context one must ask what the next steps are. As basic choices for the Bush administration are being formulated, it is useful to distinguish the "hard" from the "soft" option.

Hard Option: Recession in 1989

In the immediate aftermath of the 1988 election, voices were heard—notably that of Chairman Alan Greenspan of the Federal Reserve Board in testimony before the National Economic

Commission—advocating strong immediate action to cut the remaining budget deficit, irrespective of short-run consequences. Meanwhile, Federal Reserve policies in response to selling pressure against the dollar have created a climate of expected increases in interest rates. A recession in 1989 or 1990 remains improbable, but these are policies that, taken together, might bring one about. Several commentators, among them Henry Kaufman,[2] have argued explicitly that a mild recession in the near future should be accepted, chiefly in order to curb the growth of U.S. demand for imports and thus bring the current account into balance.

A recession strategy would cut U.S. demand for imports and, therefore, would indeed help with the trade balance in the short run. Falling demand in the United States would also slow the rise of inflationary pressures in the U.S. economy, making possible lower nominal interest rates at unchanged real values. A recession would thus, in principle, lay the basis for renewed growth free, for a time, of such pressures. And the political attraction of staging an inevitable recession early in a new administration has not gone unnoted.

Yet against these considerations must be laid others that are novel in the present situation. Most important, any recession is certain to cause an immediate sharp drop in national savings and to lay the basis for further deterioration of the trade balance over the long term. The first point is obvious when one considers the automatic cuts in income and the tax base that recessions bring, along with the more discretionary fiscal responses that they tend to engender. The second stems from the fact that recessions produce unbalanced scrapping of industrial equipment—more at home than in the new, low-cost centers of production overseas. And so they result, during the subsequent expansion, in a larger share of demand flowing to imports for any given amount of demand growth. Thus, the fix to trade achieved by a policy of fostering cycles is temporary and likely to be purchased at the price of lower savings and investment as well as a smaller capital stock, industrial base, and exporting- and import-competing capacity than would otherwise be the case.

Favorable results would be more likely if sharp moves toward fiscal and not monetary austerity were the motive force behind the slowdown of demand. In that case the rise in the deficit owing to the recession itself would be offset in part by the tighter posture of fiscal policy, so that the adverse effect on national savings would not be so large. Domestic demand could fall in a climate of falling interest rates, thus preserving a competitive dollar exchange rate, and making a greater impact on import demand, and having less immediate

effect on foreign demand for U.S. exports. (This is not guaranteed, however. Even if the requisite sweeping budget deficit reductions were enacted, it is possible, perhaps likely, that their effects would fall disproportionately on private savings rather than on consumption, such that a given target for national savings would not be reached.) In any event, with urgent pressures for new initiatives in housing, health care, environmental protection, and other areas pressing on lawmakers after a decade of neglect, it is unlikely that the requisite shift of fiscal policy can be achieved.

Advocates of a sharp early slowdown in demand growth may therefore find that the monetary instrument is, in practice, the only one available. In that event, the distortions introduced and the risks run could be exceptionally large. A return of high real interest rates and a rising dollar would lock up the present expansion of exports, demolishing both the increasing competitiveness that advanced U.S. industries presently enjoy and the developing climate of confidence in their prospects. Housing, commercial construction, and automotive sales would slump. The savings and loan industry's fiasco would, unimaginably, get worse. Mexico, Brazil, and other large debtors would face both a rapid outflow of their foreign exchange reserves and little alternative to unilateral default. Crises in the financial sector could well become pandemic.

For these reasons, the hard option remains an implausibly risky choice. This is especially the case given that the immediate alternative consists of tolerating inflation that remains, for the moment, safely less than 6 percent.[3]

Soft Option: Stagflation Redux

The most probable alternative to the hard option lies in a simple continuation of the present course of policy. This may be characterized as a slow whittling down of the fiscal deficit, achieved primarily by means of the rising surpluses in the social security trust funds. Since early 1987 the strategy has relied on rapid recovery and growth of exports to sustain forward progress in real GNP. And this requires, at a minimum, slowly falling real rates of interest and a falling real dollar exchange rate. Yet it may prove unsustainable, inasmuch as the initial phases of extremely rapid export growth (particularly to Japan and the Asian tigers) are likely to give way to a slower pace once the initial reaction of export demand to dollar depreciation has been absorbed.

With the changing fiscal/monetary mix and exchange rate, structural adjustment will again become a major theme in the U.S. political economy. Successful exporters are not the same industries

as those fostered by the inward-looking domestic demand–driven expansion of recent years. They do not sit in the same places, and they do not hire the same workers. The adjustment therefore entails displacement and the attendant social costs. Yet the present direction of fiscal policy leaves little room for meeting the needs either of displaced workers or of regions about to see the end of their phase of the economic expansion.

At the same time, present policy has fostered both a rising domestic inflation rate and widespread fears that worse times lay ahead. As GNP growth has slowed, productivity growth has decreased, such that inertial (and, in some markets, accelerating) patterns of wage settlement translate into higher consumer prices. Dollar depreciation not only adds to import costs directly; it also lifts competitive constraints on higher wage settlements in import-competing sectors. And export growth strengthens the hand of labor in those sectors where wages and salaries tend to be most volatile, because of the inherent scarcity of the human capital associated with the most successful advanced industrial processes.

Rising inflation creates problems even though the rate remains low by standards of recent memory. That is, more rapid nominal dollar depreciation, which offsets the real appreciation due to inflation itself, becomes necessary to maintain trade competitiveness and export growth; for political reasons such depreciation is difficult to achieve. With present high public-debt levels, rising inflation also imposes a larger implicit tax on private financial wealth holdings; in turn, any given official budget deficit will provide less stimulus to the economy. And as expectations of sustained inflation at slowly rising rates begin to develop, the inflation pathologies of the late 1970s threaten to reemerge. There will surely come a point, though perhaps not for several years, when the cost of tolerating those pathologies will exceed the perceived cost of the hard option.

Thus, while the soft option presents fewer risks in the short run, it is at best a transitional phase. It may indeed be leading toward a repetition of the experience of the late 1970s, with the risk that a repetition of the early 1980s would then follow. One must ask: Is there a superior choice?

An Active Alternative

The two options examined so far are essentially, if not exclusively, matters of macroeconomic policy, consistent with a philosophy of laissez-faire in microeconomic matters. In the hard case, the intent is to correct the trade deficit in the shortest possible time while suppressing inflation. In the soft case, it is to maintain the present

course of slow trade correction while allowing inflationary pressures to build gradually. The alternative also entails defining a macroeconomic position. But it also requires a selective program of intervention to ensure that the conditions for successful transition are present, that necessary adjustments will occur at a tolerable political cost, and that inflation does not reemerge as a political crisis.

The macroeconomic objective of the activist alternative must lie in accelerating the pace of economic change and transition while sustaining moderate growth and avoiding an early recession.

Macroeconomic Policy. Sustained progress toward current-account balance, based on fiscal and monetary shifts, must be the key element of the activist alternative just as it is of the other two. The difference lies in timing the changes so as to produce a maximum, sustained, positive effect on world growth, thus making possible trade equilibration at high rather than low rates of global economic expansion.

The first step, evidently necessary for political as well as economic reasons, is that agreement must be reached on a definitive path for budget deficit reduction in the United States. Here the counterproductive nature of the continuing legislative-executive dialogue on spending cuts and tax increases bears stressing. Under present arrangements, annual incremental discussions have produced regular but *ex ante* and unreliable deficit reductions: The deficit is smaller this year than last, but next year's further progress remains uncertain. Needed instead is an irregular but reliable decision, once and for all.

Specifically, a definitive course for the budget should be aimed not at budget balance, which is an unattainable and therefore noncredible objective, but at stabilizing the nominal deficit at a credible and sustainable 2 percent of GNP, equivalent to a balanced budget of the consolidated government sector after adjustment for inflation. A goal of fiscal year 1991 allows ample time for this target to be achieved, but the action designed to ensure that it will be achieved must come now. A law to raise future taxes can be enacted in the early days of the new administration, but with a delayed effective date.

The size of the required action is given by the prospective budget gap, which is presently only half a percent of GNP above the proposed 2 percent target. However, this condition is partly due to slow growth of spending, inasmuch as military purchases have declined while new civilian initiatives have been deferred. Given the growing backlog of major public-sector initiatives, it is unlikely that

the recent slow path of spending growth can be sustained. Allowing for a more realistic growth rate of federal spending in the range of 3 percent per annum after inflation, a tax package intended to raise about 1 percent of GNP in new revenues would be consistent with the final deficit objective.

The possible forms of future tax increases are manifold. However, the simpler and more focused the decision, the more credible the result. For this reason I have advocated a once-and-for-all rise in personal and corporate income tax rates. Such a rise should not take effect immediately but, instead, should become effective in mid-1990 or early 1991. Once in place, such a legislative enactment would condition, and make easier, all subsequent and interconnected macroeconomic policy decisions.[4]

Such action would make possible an immediate reduction in U.S. interest rates, while the promise of such reductions could also provide the political impetus for the necessary action on taxes. Ideally, interest rate reductions would occur conjointly with rate reductions in Japan and Europe, thus fostering a world climate conducive to strong growth of investment demand. As an acceptable second-best alternative, lower U.S. interest rates would powerfully accelerate the improvement of U.S. export competitiveness already witnessed in recent years, though at the price of a sharper decline in the dollar and greater pressure on costs and prices.

Fostering Development. As the writings in this volume attest, the new technologies are knowledge based, labor intensive, and comparatively economical in their use of resources. With improved transport and with prospects for stable political conditions worldwide, the huge and increasingly capable workforces of the developing world are becoming integrated into a worldwide production process. If follows that a major physical limitation on the potential growth of production is disappearing. From the standpoint of Keynesian analysis, we may be witnessing the evaporation, at least for the foreseeable future, of the analytical concept of a full employment barrier (or supply-side constraint) against the growth of world GNP; that which was formerly underdevelopment is becoming merely unemployment. In physical terms, an era of practically unlimited economic potential may be at hand.

The constraint on this process lies in the inadequacy of mechanisms meant to ensure the stable and sustained growth of demand. Reliance on investment means increasing exposure to the shifting winds of volatile profit expectations. Reliance on exports means increasing exposure to the vagaries of foreign business cycles

and to the instabilities of international finance. Lacking in international commerce, particularly with developing nations, are the stabilizing forces of domestic labor standards, high government expenditure, and the welfare state. And there is the age-old contradiction between the interests of each individual producing entity in low wages on the one hand and that of the world macroeconomy in sustained demand growth on the other.

In principle, the United States, with its enormous national product in relation to that of the developing countries, can sustain the growth of their demand for U.S. exports a good long time simply by running a gigantic deficit in U.S. trade. But it is obvious that the United States will not do so, inasmuch as the consequences for its relative position in the world economy and for the structure of international finance with respect to Japan and Europe would be disastrous. Other measures presently in the arsenal, such as export subsidies, could and surely should be expanded beyond their present scope. But the full crisis certainly cannot be handled by such measures alone.

At present, the preeminent problem is financing. Since the debt crisis broke in August 1982, the major Latin American economies have been constrained to import levels some 40 percent below the peaks reached in 1980. They have sharply cut back on investment purchases both public and private, with adverse results for U.S. suppliers of such goods estimated in the tens of billions of dollars. Moreover, the debt crisis has erected a virtually insuperable barrier to the resumption of rapid growth (except in special circumstances, such as the Mexican maquiladora, where the entire process is tightly linked to Northern capital and Northern markets).

The change in U.S. macroeconomic policy in 1981 liquidated the prospects for continued growth and development in Latin America based on growth of external indebtedness. It is now past time to liquidate the financial hangover that this volte-face produced. Debt settlement on terms favorable to development would not open up capital markets on the scale of the 1970s. But it would permit developing country import levels to return more nearly to normal, and it would set the stage for subsequent balanced development and recovery of private and public investment in the debt-afflicted countries. This in turn would permit the continued expansion of advanced U.S. exports, by adding a new source of demand to those already in play.

The most effective and practical means toward a possible debt settlement may reside in a joint effort by the United States and Japan, the two financial powers with the most to gain from a

resumption of more rapid development in the afflicted parts of the world economy. A joint settlement board and fund, financed by long-term Japanese loans and guaranteed by the United States, could be created to renegotiate payment terms with debtors and then to buy deeply discounted debts from the U.S. commercial banks, with the benefit of a steep discount passed along to the debtor country. U.S. regulatory powers would have to be employed to ensure the cooperation of the major banks, particularly given that realizing the losses incurred on Latin debts may result in acknowledging the insolvency of one or two large institutions. Nevertheless, this is a reasonable price to pay for getting the crisis over with at an early date. By all evidence, the basic structure of U.S. banking is not at risk; indeed, decisive action to settle the crisis might well calm rather than disturb financial markets.

Potentially, settlement of the debt on such a basis could help lay the foundation for a broad exercise in development-oriented institution building, tying the United States and Japan to a commitment toward the democratic, integrated development of Latin America and the Pacific Basin. A permanent institution, working to ensure free trade and economic integration in a climate of sustained but disciplined growth, could begin to create the kind of confidence in the ultimate success of development that so distinguished the postwar recovery of Europe and that now characterizes the ongoing integration of the European Community. It is worth noting, too, that unless the United States moves toward an integrated Pacific Basin economy that includes both Japan and the developing nations (and perhaps also China and the Soviet Union), it is likely to find itself increasingly isolated as Japan integrates with China and East Asia and as Europe integrates with the East as well as with itself.

Adapting Structure. For the United States and other advanced economies, these developments point to a continuing process of adjustment toward the supply of investment goods for world markets and away from the routine manufacture of consumer products for home use. A concomitant redeployment of workers is also essential: of young workers into science-based activities, and of older workers away from outmoded manufacturing activities and into service-sector employment.

Adjustment and redeployment once again raise a host of domestic policy questions, which can be interpreted in either a redistributive or a political light: Will it be the responsibility of the U.S. government to foster conditions leading to a smooth transition?

Will existing social capital (such as urban infrastructure and housing) be efficiently used? And will a public role be played in cushioning the effects of transition for those who are displaced or otherwise hurt by it?

The conditions for a smooth transition can be assisted, if not created, by policies that enhance the competitiveness of U.S. industry in the most advanced, science-based industrial sectors over the long run. Foremost among these is investment in education at advanced levels. Support for research and development is a second essential element. More general but no less important are those policies that make the United States a hospitable locale for human capital–intensive endeavors; these range from policies affecting the environment and quality of life to those ensuring a free and open climate for political and scientific discussion.

Efficient utilization of social capital implies that public investments (in transport, housing, water facilities, and so on) should make effective use of existing social assets. Toward this end, adequate planning mechanisms are essential. The federal role in financing and coordinating such investments has been more severely curtailed than any other federal function in the past decade. As a result, there exists a large backlog of projects; hence large new efforts to ensure that infrastructure investments keep pace with the needs of an economy in transition are called for.

Help for displaced individuals forms the final category, which covers such initiatives as unemployment insurance, trade adjustment assistance, education and retraining programs, and aid for job search and relocation. All of these have been neglected in recent years. Whether those people displaced by changing patterns of industry should be left to fend for themselves is, of course, a social question, but surely the rising incidence of homelessness and other forms of abject misery in U.S. society suggest that a better balance between social and individual responsibility can be struck.

The size of possible increases in investment in these categories can be as great as 1 percent of GNP per annum ($50 billion) after several years without affecting the broad outlines of the fiscal and monetary plans outlined above. Of this, about one-half would depend on pared-back military commitments. One-quarter would be made available as a consequence of falling interest rates and reduced service on the national debt, and the remainder would stem from the ordinary growth of revenues over and above the steady-state requirements of federal expenditure. Sustained over a full presidential term or longer, such an increase in net public investment could have dramatic effects on the long-run flexibility

and prosperity of the U.S. economy; it would also help ensure a positive political attitude among Americans toward the international transition already under way.

A brief discussion is called for regarding the role of trade restrictions, temporary and otherwise, in fostering or impeding adjustment and adaptation. (See also Chapter 1 in this book.) There is clear evidence that, as the developing countries have lowered tariff and nontariff barriers in their drive toward integration, the developed countries, and particularly the United States, have been raising new nontariff barriers to the import of LDC goods.[5] As a result, according to the World Bank, sharp increases have occurred in the share of U.S. imports covered by trade restrictions. A particularly hard burden falls on those countries, such as Brazil, in which there are comparatively few transnational corporations to help ensure market access in the United States.

What is the purpose of these restrictions? Even after extensive study, there is no persuasive evidence that trade restrictions help improve the competitiveness of the affected industries in the long run;[6] on the contrary, they generally work to slow what would otherwise be a rapid (and efficiency-promoting) decline. Nor can one link, in logic or practice, the rise of Northern trade barriers to the fall of Southern ones. Yet a benign interpretation of this phenomenon may exist. Specifically, Northern trade barriers may serve to soften Northern political opposition to redeployment and modernization of industry, by helping to ensure a gradual and cushioned decline of the emigrating sectors. In such cases, the imposition of "leaky" NTBs does not prevent rapid growth of import volumes; indeed, it may be viewed simply as the political cost of global liberalization. That said, the risks of overdoing such concessions are obvious, and extreme care is needed to ensure that there is always more leak than barrier, whenever the imposition of NTBs cannot be avoided altogether.

Stabilization. A final set of questions concerns the need to ensure that the reduction in real wages implied by depreciation and trade correction does not lead to a new round of ingrained inflation expectations and inflationary pathologies. The resolution of this difficult question probably requires some new institutions, so as to give the political authorities in the United States greater leverage over the formation of inflation expectations than presently exists.[7] Yet the experience of Japan should lead us to realize that the periodic interruption of economic growth in the pursuit of price stability is neither a necessary nor a desirable feature of economic life.

Conclusions

The liberalization, globalization, and integration of the world economy is an ongoing fact, based on new technologies, more efficient transport, economies of scale, and the increasing competence of labor forces in the developing countries. For the United States, this fact presents new opportunities on an historic scale. Globalization will proceed whether we like it or not. But the political questions that remain will determine whether the changes that are occurring will redound to the benefit of the United States. In the present conduct of our affairs, we are not taking maximum advantage of the opportunities before us and we need decisive action in macroeconomic policy, in finance, and in specific areas of public investment if we are to do so.

Notes

1. Trends in revealed comparative advantage are discussed in relation to the Asian newly industrialized economies and Brazil in Chapters 2 and 5, respectively.

2. Henry Kaufman, "Memo to the Next President: What Should be Done to Keep the Economy Afloat," *New York Times Magazine*, October 9, 1988.

3. In this context, the reaction to the Greenspan warnings and the associated market developments of President Bush ("I think about those things, but not much"), Secretary of State Baker (on vacation in Texas), and Treasury Secretary Brady (on vacation in New Jersey) may perhaps be seen as a hopeful sign. (N.B.: This quotation and that in the note following are from memory and are therefore approximate.)

4. The objection of political impossibility will be raised, in reply to which one may recall Ronald Reagan's remark on acceding to his first tax increases as governor of California: "That sound you hear is the concrete cracking around my feet."

5. See Sam Laird and Alexander Yeats, "Trends in the Nontariff Barriers of Developed Countries, 1966 to 1986" (Washington, D.C.: World Bank, 1988), mimeo.

6. For a summary, see *Has Trade Protection Revitalized Domestic Industries?* (Washington, D.C.: Congressional Budget Office, November 1986).

7. A full treatment of this issue cannot be provided here, but it is given in my book, *Balancing Acts: Technology, Finance and the American Future* (New York: Basic Books, 1989).

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